SDBP
Society for Developmental & Behavioral Pediatrics

2009 Annual Meeting

October 2 - 5, 2009
The Portland Marriott Downtown Waterfront
Portland, Oregon

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Schedule of Activities

On-site Registration Hours
Friday, October 2 ..... 8:00 am – 9:00 pm
Saturday, October 3 ..... 7:00 am – 5:00 pm
Sunday, October 4 ..... 7:00 am – 5:00 pm
Monday, October 5 ..... 8:00 am – 4:00 pm

Pre-meeting Education Committee Workshops
Friday, October 2 ..... 1:00 pm – 7:00 pm

Pre-meeting Workshops (A, B, C)
Saturday, October 3 ..... 9:00 am – 12:00 pm

Pre-meeting Workshops (D, E, F)
Saturday, October 3 ..... 1:00 pm – 4:00 pm

Annual Meeting Scientific Sessions
Sunday, October 4 ..... 9:00 am – 7:00 pm
Monday, October 5 ..... 9:00 am – 5:00 pm

Poster Sessions
Sunday, October 4 ..... 6:00 pm – 7:00 pm
Monday, October 5 ..... 2:00 pm - 3:00 pm

SDBP Business Meeting
Sunday, October 4 ..... 5:00 pm – 6:00 pm

Breakfast Meetings
Sunday, October 4 .....7:00 am – 9:00 am
- JDBP Editorial Board Meeting
- Committee Meetings

Monday, October 5 ..... 7:00 am - 9:00am
- Committee Meetings

Luncheon Meetings
Sunday, October 4 .....12:00 noon – 1:30 pm
- Trainee/Recent Graduate Luncheon
- Developmental-Behavioral Pediatrics Program Directors Luncheon

ADHD SIG and Autism SIG
Monday, October 5 ..... 3:00 pm - 5:00 pm

Exhibits
Saturday, October 3 ..... 5:00 pm – 6:30 pm
Sunday, October 4 ..... 8:30 am – 7:00 pm
Monday, October 5 ..... 8:30 am – 3:00 pm

SOCIAL EVENTS
Welcome Reception
Saturday, October 3 ..... 5:30 pm – 6:30 pm

Dinner Social
Sunday, October 4 ..... 7:00 pm – 10:00 pm

Schedule-At-A-Glance

Friday, October 2	Saturday, October 3	Sunday, October 4	Monday, October 5
8:00am - 6:00pm *Hypnosis Workshops* **1:00pm – 7:00pm** *Pre-Meeting Education Workshop* Teaching Developmental-Behavioral Pediatrics **5:00pm – 9:00pm** *Board of Directors Meeting*	**8:00am - 6:00pm** *Hypnosis Workshops* **8:00am - 12:00noon** *Board of Directors Meeting* **9:00am - 12:00noon** *3 Half-Day Workshops* A. Keys To Successful Practice: Coding And Quality Improvement B. NIH Mock Grant Review C. Practicing Collaboratively: Integrated Mental Health Services In Pediatric Primary Care **1:00pm- 4:00pm** *3 Half-Day Workshops* D. Psychopharmacologic Interventions For Very Young Children: Context And Guidelines E. Chromosome 22q11.2 Deletion Syndrome: Integrating Clinical and Research Experience F. Motivational Interviewing and Adolescents I: Clinical Skills Training **5:00pm - 5:30pm** Mentor/Mentee Reception **5:00pm – 6:30pm** *Exhibits* **5:30pm – 6:30pm** *Welcome Reception* **7:00pm - 9:00pm** *Nurse Practitioners (no CME/CE credits offered)*	**7:00am – 9:00am** *Committee Meetings* Advocacy Communications Development Education *JDBP Editorial Board Meeting* **8:30am – 7:00pm** *Exhibits* **9:00am - 7:00pm** *Posters Up - Session I* **9:00am - 9:15am** *Welcome* **9:15am - 10:30am** *Plenary Session 1 - Abstract Presentations 1 - 5* **10:30am – 10:45am** *Break* **10:45am - 12:00noon** *Lectureship Award and Presentation* **12:00noon – 1:30pm** *Trainee/Recent Graduate Luncheon* *Developmental-Behavioral Pediatrics Fellowship Program Directors Luncheon* *Research Committee* **1:30pm – 3:00pm** *Concurrent Sessions 1-3* **3:00pm - 3:15pm** *Break* **3:15pm - 4:45pm** *Concurrent Sessions 4-6* **5:00pm – 6:00pm** *SDBP Business Meeting* **6:00pm - 7:00pm** *Meet the Author: Poster Session I* **7:00pm - 10:00pm**	**7:00am – 9:00am** *Committee Meetings* Membership Past Presidents Practice Issues Program **8:30am – 3:00pm** *Exhibits* **9:00am – 3:00pm** *Posters Up - Session II* **9:00am - 10:15am** *Plenary Session 2 - Abstract Presentations 6 - 10* **10:15am – 10:30am** *Break* **10:30am – 11:45am** *Plenary Session 3 - Abstract Presentations 11 - 15* **11:45am – 12:45pm** *Lunch on your own* **12:45pm – 1:45pm** *Presidential Address* **1:45pm - 2:00pm** *Incoming President Address* **2:00pm - 3:00pm** *Meet the Author: Poster Session II* **3:00pm – 5:00pm** *SIG Meetings & Special Session* • Autism SIG • ADHD SIG

General Information

Who Should Attend

This program is planned to meet the needs of pediatricians (researchers, teachers, and/or clinicians), pediatric psychologists, nurses, social workers and other healthcare providers and researchers interested in developmental and behavioral pediatrics. A variety of educational formats will encourage the exchange of new scientific and clinical information and support the interchange of opinions regarding care and management issues relevant to developmental and behavioral pediatrics. Scientific material will be presented through symposia, oral abstracts, concurrent sessions, plenary sessions, small group sessions designed for in-depth exploration of specific topics, and poster presentations.

Goals

After attending this meeting the participants will be able to:

- Use the best practice strategies in the care of children from birth to adolescence.
- Discuss best practice use of psychopharmacology in children and understand the issues related to medication use in young children.
- Describe new methods of managing developmental—behavioral issues in practice.
- Summarize the current knowledge of how the environment can affect a child's brain development and function.
- Demonstrate strategies and skills for teaching others about topics in developmental-behavioral pediatrics.
- Discuss advances in the treatment of ADHD, autism, and other developmental-behavioral disorders.

Registration

All attendees must be registered for the meeting. Registration is located in the **Oregon Ballroom Foyer.** Registration hours are listed in the Schedule of Activities on page 2.

Pre-Meeting Half-Day Workshops

A select number of courses addressing the needs of pediatricians, psychologists and other professionals caring for children with developmental or behavioral problems will be presented again this year. Workshops will be in half-day formats. Registration for these sessions is in addition to the Annual Meeting registration.

Abstracts

Abstracts selected for the 2009 SDBP Annual Meeting will be presented in plenary, concurrent, and poster sessions highlighting the most outstanding papers from a variety of subspecialties related to pediatric developmental and behavioral medicine. All accepted abstracts of new and previously presented research are published in this SDBP program book. Abstracts presenting new scientific findings will also be published online in the *Journal of Developmental and Behavioral Pediatrics*.

Poster Sessions

Two different Meet the Author poster sessions highlighting both new and previously presented research will be held on Sunday, October 4 from 6:00pm – 7:00pm and Monday, October 5 from 2:00pm – 3:00pm, respectively.

Exhibits

Exhibits will be located in **Salon G/H/I** throughout the duration of our meeting.

Camera and Cell Phone Use

Cameras and video cameras are not permitted in any event during the SDBP Annual Meeting. As a courtesy to fellow attendees, please turn off or silence cell phones during educational sessions.

Continuing Education

Satisfactory completion: Participants must have paid the tuition fee, attended their chosen sessions in their entirety and completed an online Attendance / Evaluation form in order to receive a Certificate of Attendance. Participants not fulfilling these requirements will not receive a certificate. Certificates are available immediately after completing the online evaluation form. You must complete the online form by November 6, 2009 (at www.CmeCertificateOnline.com, Password: SDBP09AM) in order to receive your certificate. The site will close after November 6, 2009 and certificates will no longer be available.

Physicians

This activity has been planned and implemented in accordance with the Essential Areas and Elements of the Accreditation Council for Continuing Medical Education through the joint sponsorship of the Institute for the Advancement of Human Behavior, A Medical Education Company (IAHB-AMEDCO) and the Society for Developmental and Behavioral Pediatrics (SDBP). IAHB-AMEDCO is accredited by the ACCME to provide continuing medical education for physicians.

AMA PRA Statement

IAHB-AMEDCO designates this educational activity for a maximum of 21.0 AMA PRA Category 1 Credit(s)TM. Physicians should only claim credit commensurate with the extent of their participation in the activity.

Psychologists

This course is cosponsored by Amedco and SDBP. Amedco is approved by the American Psychological Association to sponsor continuing education for psychologists. Amedco maintains responsibility for this program and its content. Maximum of 21.0 hours.

Social Workers

This course is co-sponsored by R. Cassidy Seminars and SDBP. R. Cassidy Seminars, ASWB provider #1082, is approved as a provider for continuing education by the Association of Social Work Boards, (www.aswb.org), phone:

General Information

1- 800-225-6880) through the Approved Education (ACE) program. R. Cassidy Seminars maintains responsibility for the program. Social workers should contact their regulatory board to determine course approval. Social workers will receive up to 21.0 continuing education clock hours in participating in this course.

California Board of Behavioral Sciences
Course meets the qualifications for up to 21.0 hours of continuing education credit for MFTs and/or LCSWs as required by the California Board of Behavioral Sciences, Provider #PCE875.

ADA Statement

ADA accommodations will be made in accordance with the law. If you require ADA accommodations, please indicate what your needs are at the time of registration. We cannot ensure the availability of appropriate accommodations without prior notification.

Full Disclosure Policy

All faculty participating in the continuing medical education programs are expected to disclose to the program audience any real or apparent conflict(s) of interest related to the content of their presentation(s). Full disclosure of faculty relationships can be found on page 11 of this program.

Evalutations

Your opinions are important to us! Please be sure to complete an evaluation form to aid the SDBP Program Committee in evaluating the effectiveness of this educational activity. These forms will be available online with your CME/CE Accreditation until November 6, 2009 at www.CmeCertificateOnline.com, Password: SDBP09AM.

Social Events

Welcome Reception
Salon G/H/I
Saturday, October 3, 5:30pm – 6:30pm

Enjoy time with friends and colleagues in a casual setting.

Dinner Social
Salon F
Sunday, October 3, 7:00pm – 10:00pm

After viewing the latest science in developmental and behavioral pediatrics at the Meet the Author Session (6:00pm in the Salon G/H/I Foyer), join colleagues and friends for a fabulous dining experience. The Dinner Social is included in the Annual Meeting registration fee.

All guests must be registered as an Accompanying Person in order to attend the Social Events.

Committee Information

Sunday, October 4, 2009, 7:00am – 9:00am
Advocacy - Meadowlark
Communication - Douglas Fir
Development - Salmon
Education - Mt Hood

Sunday, October 4, 2009, 12:00noon – 1:30pm
Research - Portland

Monday, October 5, 2009, 7:00am – 9:00am
Membership - Meadowlark
Past Presidents (begins at 7:30) - Salmon
Practice Issues - Douglas Fir
Program - Eugene

Committee Descriptions:
ADVOCACY
Jean C. Smith, MD, Co-Chair
Lynne Sturm, PhD, Co-Chair

The Advocacy Committee is an interdisciplinary group of SDBP members promoting one of the SDBP's Strategic Plan goals – "to be a leader in advocacy regarding public policy for children and professionals in the field." Current goals of the committee include:

- Increase SDBP members' awareness of the public policy issues that impact the wellbeing of children and their families. Committee members review pending national legislature and policy initiatives identified through emerging SDBP liaisons/ partnerships with organizations such as the AAP, SRCD, APA and Zero to Three.
- Develop an Advocacy Listserv for interested SDBP members to communicate time sensitive-information about national public policy issues and advocacy to equip members to respond at the national, local and state levels.
- Increase the number of Commentaries published in the JDBP that relate to policy and advocacy topics. Also, increase reviews of books and films that have policy/advocacy implications as yet another way to bring relevant public policy issues to membership attention.
- Facilitate linkages with experts within SDBP membership when requests for support in conducting advocacy activities are received from SDBP members or from outside professional organizations.

The Advocacy Committee meets at the Annual Meeting and by periodic conference calls throughout the year. SDBP Members are encouraged to join the committee. If interested, please email Jean Smith, M.D., Co-Chair (jcsmith@wakegov.com) or Lynne Sturm, Ph.D., Co-Chair (lsturm@iupui.edu).

General Information

COMMUNICATIONS
Robert Needlman, MD, Co-Chair
Susan Rosenthal, PhD, Co-Chair

The Communication Committee works closely with the team at Degnon Associates to put out the newsletter, and to oversee the website. In a recent newsletter initiative we asked sister organizations to submit articles about their activities, while they ran articles about SDBP. The website has undergone a recent revision and facelift, with some additional tweaking to be done. Potential new web functions come up on a regular basis. We welcome participation by members with ideas and energy. If communication is the heart of DBPeds, then we in the Communication Committee are the heart of SDBP.

DEVELOPMENT
Dan Coury, MD, Chair

The Development Committee continues to explore new ways of increasing support for SDBP activities. Our most successful activities continue to be through donations to the SDBP Endowment or Research Grant funds through the option attached to our annual membership renewal process, and our continued solicitation of exhibitors at the Annual Meeting. Our proposal for a NIH R13 Conference Grant was not funded, but we were successful in securing unrestricted educational grants from Lilly USA, LLC and Shire.

Most recent activity has centered on potential funding for the SDBP Research Grant via a federally funded grant process. This has also led to discussions of funding to support a developmental-behavioral pediatrics research network which would potentially help meet portions of the SDBP Strategic Plan pertaining to research and quality improvement as well as others not yet considered.

EDUCATION
Franklin Trimm, MD, Co-Chair
Carolyn Bridgemohan, MD, Co-Chair

The Education Committee is an interdisciplinary group that promotes innovative, efficient and effective education in Developmental and Behavioral Pediatrics at all levels of pediatric training to support optimal developmental and behavioral health for all children. Current goals of the committee include: 1) promoting optimal education in DB Pediatrics through our educational workshops that focus on model methods of teaching and evaluating medical students, residents, and fellows; 2) establishing an online library of such resources; 3) promoting lifelong learning of DB Pediatricians through additional educational activities (e.g. DB Prep, DB Peds Self-Assessment); and 4) providing for ongoing communication among DB Pediatrics educators to address new and ongoing concerns. The committee is open to any member wishing to participate and encourages the participation of fellows.

FELLOWSHIP TRAINING (this committee is meeting as part of the Program Directors lunch Sunday)
Carol Weitzman, MD, Chair

The DBP Fellowship Training Committee continues to be busy and is working hard on new initiatives. We continue to act as a resource for Fellowship Program Directors by providing consultation and support in regards to completing a PIF, meeting ACGME requirements and preparing for a site visit. We have begun a listserv for program directors to have a forum to discuss questions and issues across programs long after the meeting ends. We have now successfully presented workshops for the past 2 years at the annual meeting that are relevant to fellows and Program Directors. The educational needs of the these groups have now been fully integrated into the Pre-Meeting Educational workshops.

One of the biggest successes of the Committee has been the implementation of the MentorMatch Program, which has successfully matched approximately 25 fellows and junior faculty with more senior faculty, across disciplines. We match according to research & career interests, and according to requested mentoring needs.

The biggest issue we are now addressing is in considering whether DBP Fellowship Programs should use a match system. We will be learning about this at the upcoming meeting and a representative from the National Residency Match Program will be coming to talk with our group at the annual lunch.

The Committee is open to new ideas and welcomes not only program directors to join but anyone with an interest in mentoring fellows. We welcome interdisciplinary participation in this committee.

MEMBERSHIP
Heidi M. Feldman, MD, PhD, Co-Chair
Terry Stancin, PhD, Co-Chair

The Membership Committee is hard at work on meeting Goal 1 of the strategic plan: "To become the organizational home for professionals engaged in interdisciplinary approaches to developmental-behavioral health." We seek new members from a wide range of professional backgrounds. We are particularly focused on increasing the racial and ethnic diversity of our membership. We would like to increase the proportion of trainees and young faculty. The committee is open to new members and welcomes creative ideas.

PAST PRESIDENTS
Ellen Perrin, MD, Chair

The Past Presidents Committee has laid out some goals for the coming few years:
1. Assist with maintaining and recording the institutional

memory of the Society, including the history of its founding.
2. Serve as consultants to the Board of Directors, Officers, and Committees.
3. Play a role in the Annual Meeting -- such as moderating sessions or helping to plan a special session.
4. Assist with fundraising for the Society in general, and in particular for the Research Award.
5. Serve as mentors for Fellows and Junior members of the Society, in particular regarding career planning and advancement (e.g. promotions, tenure decisions, and taking on administrative responsibilities).
6. Present a workshop on advocacy.

Dr. Ellen Perrin agreed to serve as the first Chair of the Committee. She has attended Board meetings on behalf of the Committee.

In the past year the group has named Dr. Robin Hansen as the official "Historian" for the Society. We have interviewed (on videotape) nine past presidents and Robert Haggerty.

Several past presidents will serve as moderators of plenary sessions at the 2009 meeting, as well as participating in other activities at the meeting. The Group will meet at the SDBP Annual Meeting to move forward on its goals.

PRACTICE ISSUES
Adrian D. Sandler, MD, Co-Chair
Charles T. Morton, MD, Co-Chair

The Practice Issues Committee, which is open to new members, will address the following Goal 6 objectives of the July 2007 Strategic Plan:

1. Analyze, interpret and disseminate the results of the Practice Parameters and Financial Factors survey.
2. Facilitate discussion of practice issues, to include: sessions on coding at Annual Meetings, venues for discussion at the Annual Meeting and DB:PREP; and collaboration with the AAP Section on DBP.
3. Determine strategies to champion interdisciplinary practice, to include publicizing successful models of interdisciplinary practice.
4. Evaluate the needs for SIGs and research registries for quality improvement in clinical practice.
5. Promote best practices in DBP to all child health care providers, to include exploration of development of standards of care.

Consider collaborating with other relevant groups to conduct a workforce analysis for the field.

PROGRAM
Nancy E Lanphear, MD, Chair

The program committee plans the Annual Meeting. In this endeavor, we strive to achieve a balance of topics, to select the best science in our field and to present a broad range of topics to be interesting to a diverse group of clinicians, researchers and teachers. The committee selects workshops, evaluates abstracts and meets annually at the meeting. In addition, periodic conference calls occur. The committee is a small but dedicated group. If you are interested in being considered as a member, please contact Program committee chair, Nancy Lanphear, MD. We periodically have openings to join this group.

RESEARCH
Paul Wang, MD, Co-Chair
Susan P. Berger, PhD, Co-Chair

The research committee works in an interdisciplinary manner to support the SDBP Strategic Goal of promoting and disseminating research in developmental-behavioral health. Its membership spans a broad range of research interests, and is comprised of both experienced and less experienced individuals.

Goals for 2009-2010: Create a database of research expertise within the SDBP. Support mentoring of junior researchers within the SDBP. Support SDBP member participation in research networks relevant to developmental-behavioral health. Continue to coordinate the SDBP Research Award. Continue to support expert review of abstracts submitted for the SDBP and PAS Annual Meetings.

Open to new members. Please join us at our Committee meeting in Portland, at lunchtime on Sunday!

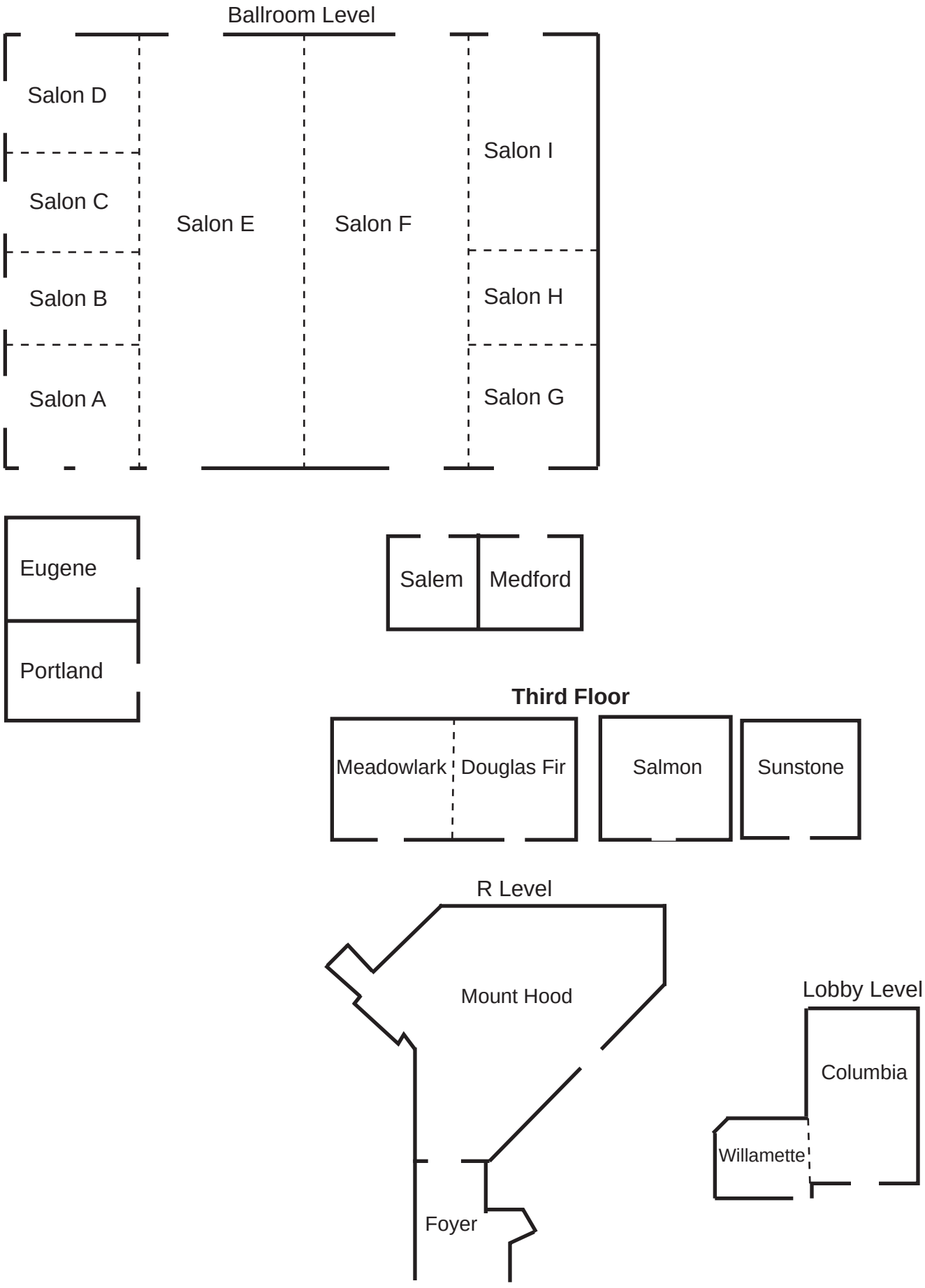
TRAINEE/RECENT GRADUATE AD HOC COMMITTEE
Sarah Schlegel, MD, Chair

The Trainee/Recent Graduate Ad Hoc Committee (TRGAHC) convened its official inaugural meeting at the SDBP's 2008 Annual Meeting. The TRGAHC serves three purposes: 1) developmental-behavioral pediatrics trainee and recent graduate (within the previous two years) representation and voice within the Society, 2) organized forum for addressing training issues, and 3) support for recent graduates.

Significant areas of interest for the TRGAHC are the current state, trends, and future direction of the field of developmental-behavioral pediatrics; training matters; and transitioning after graduation from training.

The TRGAHC consists of present associate member trainees as well as recent graduates (within the previous two years) of developmental-behavioral pediatrics specialties. The TRGAHC Co-Chairs typically represent two different allied disciplines.

Hotel Floor Plan



Program Committee & Board of Directors

SDBP 2009 Program Planning Committee

Nancy E. Lanphear MD, Chair
BC Children's Hospital, Vancouver

Nathan J. Blum, MD
Children's Hospital of Philadelphia

Carolyn F. Bridgemohan, MD
Harvard Medical School
Children's Hospital Boston

Pamela C. High, MD
Brown Medical School

Robyn Mehlenbeck, PhD
Brown Medical School, Rhode Island Hospital

Randy Phelps, MD, PhD
CDRS/OHSU

Ellen J. Silver, PhD
Albert Einstein College of Medicine

Franklin Trimm, MD
University of Southern Alabama

Paul P. Wang, MD
Seaside Therapeutics

2008 - 2009 Board of Directors

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Robin L Hansen, MD (09)
Child Development/MIND Institute
UC Davis Medical Center

President-Elect
Leonard Rappaport, MD (09)
Children's Hospital Boston

Secretary-Treasurer
John C. Duby, MD (09)
Akron Children's Hospital

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Pamela C. High, MD (09)
Brown Medical School

Desmond P. Kelly, MD (11)
Children's Hospital Outpatient Center

Robyn Mehlenbeck, PhD (11)
Brown Medical School, Rhode Island Hospital

Lynne Sturm, PhD (10)
Riley Child Development

Executive Director
Laura Degnon, CAE
McLean, VA

Awards and Grants

The 2009 SDBP Lecture Award Recipient is:

W. Thomas Boyce, MD

Tom is the Sunny Hill Health Centre/BC Leadership Chair in Child Development in the Human Early Learning Partnership and the Centre for Community Child Health Research at the University of British Columbia. He is also Co-Director of CIFAR's Experience-Based Brain and Biological Development Program and a member of Harvard University's National Scientific Council on the Developing Child.

As a social epidemiologist and a developmental-behavioral pediatrician, Tom's research addresses how neurogenomic and psychosocial processes work together to lead to differences in childhood disease across different socioeconomic groups. Simply put, his work attempts to answer the question, "What roles do the psychological and socio-economic environments of children play in their health?" Studying the interactive influences of social adversities and neurobiological responses, Tom's work has shown how psychological stress and neurobiological reactivity to aversive social contexts operate to produce disorders of both physical and mental health in populations of children, refuting the once widely-held belief that stress played no part in the production of disease. Taking the implications of his research into account, a central goal of Tom's work is to develop a new synthesis between biomedical and social epidemiologic accounts of how human diseases develop and an articulation of the public health implications of this synthetic view.

Tom completed his baccalaureate degree in philosophy and psychology at Stanford University and an MD at Baylor College of Medicine. He then did pediatric residency training at the University of California, San Francisco and was named a Robert Wood Johnson Foundation Clinical Scholar at the University of North Carolina, Chapel Hill. Prior to his appointment at the University of British Columbia, he spent twenty years on the pediatrics and public health faculties of the University of California, San Francisco and Berkeley.

SDBP Research Grant

It is with great pleasure that the Society for Developmental and Behavioral Pediatrics announces the return of the SDBP Research Grant for 2009. This is the fifth year we are offering this award. The SDBP Research Grant is designed to promote research in developmental and behavioral pediatrics, by providing a research grant to a young investigator in our field. The $10,000 grant is for a period of one year, beginning November 1, 2009. Financial support for this grant was provided by generous contributions from a number of former presidents of the society. This year's recipient will be announced during the SDBP Business Meeting which is taking place on Sunday, October 4 from 5:00 – 6:00pm.

Disclosure

Acknowledgement of Commercial Support
Meeting Bags sponsored by:
Baylor College of Medicine – Medical Genetics Laboratories

Educational Grants received from:
Lilly USA, LLC
Shire

Learning Objectives
After attending this meeting, participants will be able to:
- Use the best practice strategies in the care of children from birth to adolescence.
- Discuss best practice use of psychopharmacology in children and understand the issues related to medication use in young children.
- Describe new methods of managing developmental—behavioral issues in practice.
- Summarize the current knowledge of how the environment can affect a child's brain development and function.
- Demonstrate strategies and skills for teaching others about topics in developmental-behavioral pediatrics.
- Discuss advances in the treatment of ADHD, autism, and other developmental-behavioral disorders.

Statement of Disclosure
All faculty and planners participating in the continuing medical education programs sponsored by IAHB-Amedco are expected to disclose to the program audience any real or apparent conflict(s) of interest related to the content of their presentation(s).

Financial Relationship Key
G-Grant/Research Support, C-Consultant/Scientific Advisor, S-Speaker 's Bureau, E-Employee, M-Major Stockholder, O-Other Relationship, N-Nothing to disclose

Resolution Key
R1-Restricted to Best Available Evidence & ACCME content validation statement , R2-Removed/Altered Financial Relationship, R3-Altered Control, R4-Peer Review with 2nd method of resolution, N/A-Not Applicable

First	Last	Disclosure/ Resolution
Wayne	Adams	N, N/A
Roger	Akins	N, N/A
Kathleen	Albus	N, N/A
Djesika	Amendah	N, N/A
Kathleen	Angkustsiri	N, N/A
William	Barbaresi	N, N/A
Rebecca	Baum	N, N/A
Laurie	Bauman	N, N/A
Robert	Belknap	N, N/A
Samantha	Berkule	N, N/A
David	Bickham	N, N/A
Emine Bahar	Bingoler Pekcici	N, N/A
Nathan	Blum	G-McNeil Consumer Pharmaceuticals/R1, R4
Tom	Boyce	N, N/A
Carolyn	Bridgemohan	N, N/A
Gina	Cardillo Lebedeva	N, N/A

First	Last	Disclosure/ Resolution
Eugenia	Chan	N, N/A
April	Chang	N, N/A
Michael	Ching	N, N/A
Robert	Colligan	N, N/A
Shanlee	Davis	N, N/A
Caroline	Davit	N, N/A
Kanchana	De Silva	N, N/A
Anne	DeBattista	N, N/A
Milena	Doerfer	N, N/A
Benard	Dreyer	N, N/A
Gulden	Ekici	N, N/A
Janice	Enriquez	N, N/A
Ilgi	Ertem	N, N/A
Heidi	Feldman	N, N/A
Celeste	Flachsbart	N, N/A
Kiti	Freier Randall	N, N/A
Kristin	Garber	N, N/A

Disclosure

First	Last	Disclosure/ Resolution
Ana	Garnecho	N, N/A
Cynthia	Gerhardt	N, N/A
Laurie	Glader	N, N/A
Mary Margaret	Gleason	N, N/A
Julie	Grossenbacher	N, N/A
Trevor	Hall	N, N/A
Kim	Hamai	N, N/A
Jane	Hamel-Lambert	N, N/A
Robin	Hansen	N, N/A
Ellen	Hanson	N, N/A
Lynne	Haverkos	N, N/A
Rachel	Higginbotham	N, N/A
Pamela	High	N, N/A
Fumiko	Hoeft	N, N/A
Karen	Hopkins	N, N/A
Marita	Hopmann	N, N/A
Barbara	Howard	G, E, M-Total Child Health/R1, R4
Ruee	Huang	N, N/A
Lynne	Huffman	N, N/A
Rachel	Hundley	N, N/A
Maia	Hurley	N, N/A
Justeen	Hyde	N, N/A
Shafali Spurling	Jeste	N, N/A
Slavica	Katusic	N, N/A
Jill	Killian	N, N/A
Hanna	Kim	N, N/A
Sara	Kim	N, N/A
Emine	Kocak	N, N/A
Mesut	Kocak	N, N/A
Olaf	Kraus de Camargo	N, N/A
Vibha	Krishnamurthy	N, N/A
Patricia	Kuhl	N, N/A
Nancy	Lanphear	N, N/A
Ingrid	Leckliter	N, N/A
Laurel	Leslie	N, N/A
Amy	Lewandowski	N, N/A
Michelle	Macias	N, N/A
Robyn	Mehlenbeck	N, N/A
Melissa	Meier	N, N/A
Alan	Mendelsohn	N, N/A
Andres	Mendez	N, N/A
Kimberly	Miller	N, N/A
Danusia	Nedilskyj	N, N/A
Anna	Ocampo	N, N/A

First	Last	Disclosure/ Resolution
Tonya	Palermo	N, N/A
Georgina	Peacock	N, N/A
Ellen	Perrin	N, N/A
Mary	Peterson	N, N/A
Randall	Phelps	N, N/A
Manuel	Pimentel	N, N/A
Nasir	Ramzi	N, N/A
Robert	Reese	N, N/A
Adrian	Sandler	N, N/A
Sherry	Shamblin	N, N/A
Yiping	Shen	N, N/A
Ellen	Silver	N, N/A
Tony	Simon	N, N/A
Julie	Slay	N, N/A
Alison	Smoller	N, N/A
Neelkamal	Soares	N, N/A
Rob	Sprang	N, N/A
Terry	Stancin	N, N/A
Joel	Stoddard	N, N/A
Lynne	Sturm	N, N/A
Raymond	Sturner	G, E, M-Total Child Health/R1, R4
Mariann	Suarez	N, N/A
Paula	Sullivan	N, N/A
Elizabeth	Super	N, N/A
Wen-Hann	Tan	N, N/A
Amanda	Thompson	N, N/A
Suzy	Tomopoulos	N, N/A
Franklin	Trimm	N, N/A
Kathryn	Vannatta	N, N/A
Samara	Viner-Brown	N, N/A
Robert	Voigt	N, N/A
Paul	Wang	N, N/A
Dana	Watnick	N, N/A
Amy	Weaver	N, N/A
Laura	Weissman	N, N/A
Carol	Weitzman	N, N/A
Beth	Wildman	N, N/A
Anna	Wilson	N, N/A
Elaine	Wirrell	N, N/A
Bai-Lin	Wu	N, N/A
Gonca	Yilmaz	N, N/A
Philip	Zeskind	N, N/A
Samuel	Zinner	N, N/A

Exhibitor Product Descriptions

American Academy of Pediatrics
NEW! Developmental & Behavioral Pediatrics Self-Assessment from the AAP.

Visit our booth to sign up for a free trial of the new self-study program bases on American Board of Pediatrics (ABP) subspecialty content specifications for Maintenance of Certification (MOC). Written by subspecialists, PREP DB-Peds is approved by the American Board of Pediatrics for MOC Part 2: Lifelong Learning and Self Assessment.

Artz Center for Developmental Health and Audiology
We provide specialized, team-based developmental care to help children realize their full potential, and act as a catalyst in the community to raise the standard of developmental health for all children.

Baylor College of Medicine - Medical Genetics Laboratories
The Medical Genetics Laboratories offer a broad range of diagnostic genetics tests including DNA diagnostics, sequencing, cytogenetics, FISH diagnostics, cancer cytogenetics, chromosomal microarray analysis, biochemical genetics, and Mitochondrial DNA analysis. Please visit our booth for more information.

Bio Behavioral Diagnostics
BioBehavioral Diagnostics markets the Quotient™ ADHD System for the objective assessment of impulsivity, hyperactivity and inattention. It measures motion and analyzes shift in attention state to guide personalized strategies for ADHD management.

Brookes Publishing Co.
Trusted resources for professionals working to enhance the health and success of children with and without disabilities. Publisher of the reliable screening tool Ages & Stages Questionnaires®, Third Edition (ASQ-3™).
www.brookespublishing.com
www.agesandstages.com

CHADIS
Administers questionnaires online assessing development, autism and mental health
Accesses:
- Assessment results
- DBP eTextbook
- Handouts & community resources

Shares data/Generates QI reports
1-888-4CHADIS or info@CHADIS.com

CNS Vital Signs
CNS Vital Signs enables rapid clinic-based computerized assessments of neurocognitive function aiding with the evaluation (MEASURE), management, and longitudinal care (MONITOR) of patients with neurologic and psychiatric diseases.

Elsevier – Saunders - Mosby
Elsevier – Saunders – Mosby has the latest books and journals in Pediatrics.

JDBP Book Reviewer Table
SDBP members are invited to select books from the table to review. Reviewers will submit their contact information, take the book home (and keep!) to review, then submit a review for the Journal of Developmental and Behavioral Pediatrics.

Lippincott Williams & Wilkins – WKH
Lippincott Williams & Wilkins, a Wolters Kluwer Health company is a leading international publisher of medical books, journals, and electronic media. Visit our booth to browse our comprehensive product line.

The Society for Developmental and Behavioral Pediatrics (SDBP)
SDBP is an interdisciplinary professional organization that promotes the developmental and behavioral health of all infants, children, adolescents and their families by advancing research, education, evidence-based clinical practice and advocacy. Our Vision is to be the interdisciplinary leaders in optimal developmental and behavioral health for all children. SDBP's Core Values include Biopsychosocial model, Collaboration, Scientific basis of field, Interdisciplinary, Collegiality.

Yasoo Health Inc
Yasoo Health is a science-based nutraceutical company with a pipeline of condition-specific products that are supported by clinical trials. Yasoo develops innovative, research based products consisting of essential nutrients and natural compounds.

Program Schedule

Friday, October 2, 2009

1:00pm – 5:30pm Pre-Meeting Education Committee Workshops – ***An extra fee applies to attend.***
Teaching Developmental-Behavioral Pediatrics
Co-Chairs/Facilitators: *Franklin Trimm, MD and Carolyn Bridgemohan, MD*
Salon F

The Education Workshop has been organized to help Developmental-Behavioral Pediatrics residency rotation directors and faculty address the challenges of teaching a significant curriculum in a limited time. The format will consist of an initial large group meeting followed by small group sessions and then closing with a large group discussion of new interpretations of rules from the RRC. These sessions will present creative methods to teach residents specific content including normal development, behavior management, mental health and ADHD. There will also be sessions on interactive teaching methods and evaluation of longitudinal curriculum. This workshop continues the tradition of previous successful education workshops in providing innovative tools for teaching through interactive and practical sessions.

5:00pm – 9:00pm Board of Directors Meeting
Douglas Fir

Saturday, October 3, 2009

7:00am – 5:00pm Registration
Oregon Foyer

8:00am – 12:00noon Board of Directors Meeting
Douglas Fir

9:00am – 12:00noon 3 Pre-Meeting Half Day Workshops – ***An extra fee applies to attend.***

Workshop A - Keys to Successful Practice: Coding and Quality Improvement
Adrian Sandler, MD, Mission Children's Hospital, Asheville, NC, Robert Belknap, MD MPH, Child and Adolescent Health Specialists, Cohasset, MA, Rebecca Baum, MD, Nationwide Children's Hospital, Columbus, OH, Michelle Macias, MD, Medical University of South Carolina, Charleston, SC
Salon F

Workshop B - NIH Mock Grant Review
Lynne M. Haverkos, MD, MPH, Marita R. Hopmann, Ph.D., Eunice Kennedy Shriver National Institute of Child Health and Human Development, Rockville, MD
Mt. Hood

Workshop C - Practicing Collaboratively: Integrated Mental Health Services in Pediatric Primary Care
Terry Stancin, PhD, Case Western Reserve University School of Medicine, Cleveland, OH, Lynne A. Sturm, PhD, Indiana University School of Medicine, Indianapolis, IN, Jane Hamel-Lambert, MBA, Ph.D., Ohio University College of Osteopathic Medicine, Athens, OH, Ellen C. Perrin, MD, The Floating Hospital for Children, Tufts Medical Center, Boston, MA, Sherry Shamblin, PCC-S, Tri-Country Mental Health and Counseling Services, Athens, OH, Paula Sullivan, PhD, Riley Hospital for Children, Indiana University School of Medicine, Indianapolis, IN, Beth Wildman, PhD, Kent State University, Kent, OH
Columbia

Program Schedule

1:00pm – 4:00pm 3 Pre-Meeting Half Day Workshops – ***An extra fee applies to attend.***

Workshop D - Psychopharmacologic Interventions for very Young Children: Context and Guidelines
Mary Margaret Gleason, MD, Tulane University School of Medicine, New Orleans, LA
Salon F

Workshop E - Chromosome 22q11.2 Deletion Syndrome: Integrating Clinical and Research Experience
Kathleen Angkustsiri, MD, UC Davis Medical Center, Sacramento, CA, Tony J. Simon, PhD, UC Davis MIND Institute, Sacramento, CA, Robin Hansen, MD, Ingrid Leckliter, PhD, Janice Enriquez, PhD, Roger Akins, DO, Joel Johnson, MD, UC Davis Medical Center, Sacramento, CA
Mt Hood

Workshop F - Motivational Interviewing and Adolescents I: Clinical Skills Training
Mariann Suarez, PhD, ABPP, University of South Florida Health Sciences Center, Tampa, FL
Columbia

5:00pm – 6:30pm Exhibits
Salon G/H/I

5:00pm – 5:30pm Mentor/Mentee Reception
Salon G/H/I

5:30pm – 6:30pm Opening Reception
Salon G/H/I

7:00pm – 8:30pm Trainee\Recent Graduates "Job Search Process – Panel & Discussion"
Medford

Developed to provide advice about the process of searching for a job after fellowship

7:00pm – 9:00pm Nurse Practitioner's Meeting – free to attend
Columbia

Developmental Behavioral Pediatric Nurse Practitioners will discuss the formation of a Special Interest Group in SDBP. There will be continuing discussion of the need for advanced educational opportunities and certification for Nurse Practitioners in Developmental Behavioral Pediatrics. The Strategic Planning group for SDBP has made a strong statement of support for Nurse Practitioners in the organization. There will be discussion of how to increase NP involvement in SDBP.

7:00pm – 9:00pm Psychologists "Meet & Greet"
Mt Hood

An opportunity to get together with your fellow psychologists in a casual setting. Trainees Welcome!

Sunday, October 4, 2009

7:00am – 5:00pm Registration
Oregon Foyer

7:00am – 9:00am Committee Meetings and JDBP Editorial Board Meeting
Advocacy – Co-Chairs: *Jean C. Smith, MD and Lynne Sturm, PhD*
Meadowlark
Communications – Co–Chairs: *Robert Needlman, MD and Susan Rosenthal, PhD*
Douglas Fir

Program Schedule

Development – Chair: *Dan Coury, MD*
Salmon
Education – Co-Chairs: *Franklin Trimm, MD and Carolyn Bridgemohan, MD*
Mt. Hood
JDBP Editorial Board Meeting
Columbia

8:30am – 7:00pm — Exhibits
Salon G/H/I

9:00am- 7:00pm — Posters Up – Session 1
Salon G/H/I Foyer

9:00am – 9:15am — Welcome
Salon E/F

9:15am – 10:30am — Plenary Session I (Abstract Presentations 1-5)
Chair: *Marty Stein, MD*
Salon E/F

9:15am – 9:30am — Abstract #1: Epilepsy in Children with ADHD: A Population-Based Study
Shanlee M. Davis, BAS, Mayo Medical School, Slavica K. Katusic, MD, Health Sciences Research, William J. Barbaresi, MD, Pediatric and Adolescent Medicine, Jill Killian, BS, Amy L. Weaver, MS, Health Sciences Research, Elaine C. Wirrell, MD, Neurology, Mayo Clinic College of Medicine, Rochester, MN

9:30am – 9:45am — Abstract #2: The Global Failure - Barriers In Developmental and Behavioral Pediatrics Residency Training: Survey of Rotation Directors
Samuel H. Zinner, MD, Pediatrics, University of Washington, Seattle, WA, Franklin Trimm, MD, Pediatrics, University of South Alabama, Mobile, AL, Carol Weitzman, MD, Pediatrics, Yale University, New Haven, CT, Sara Kim, PhD, Medical Education & Biomedical Informatics, University of Washington, Seattle, WA

9:45am – 10:00am — Abstract #3: Deletions of Neurexin-1 Predispose to a Wide Spectrum of Developmental Disorders
Ramzi H. Nasir, MD, MPH, Michael Ching, MD, MPH, Developmental Medicine, Yiping Shen , PhD, Laboratory Medicine, Shafali Spurling Jeste, MD, Neurology, Wen-Hann Tan, BMBS, Genetics, Bai-Lin Wu, PhD, M. Med, Laboratory Medicine, Children's Hospital Boston, Boston, MA

10:00am – 10:15am — Abstract #4: Maternal & Infant Risk Factors Associated with Infant Inconsolability: Who is Crying Now?
Ana Garnecho, MD, Pamela High, MD, Pediatrics, Brown Alpert Medical School/Hasbro Children's Hosp, Providence, RI, Samara Viner-Brown,, Hanna Kim, PhD, Center for Health Data & Analysis, RI Department of Health, Providence, RI

10:15am – 10:30am — Abstract #5: Increasing Blood Draw Compliance in Children with Autism Spectrum Disorders (ASD)
Ellen Hanson, PhD, Caroline Davit, BS, Rachel Hundley, PhD, Developmental Medicine, Children's Hospital Boston, Boston, MA

Program Schedule

10:30am – 10:45am — Break
Salon G/H/I

10:45am – 12:00noon — Lectureship Award and Presentation
The Biology of Misfortune: How Heritable Vulnerabilities and Unavoidable Adversities Conspire in the Lives *of Children*
W. Thomas Boyce, MD, Sunny Hill Health Centre/British Columbia Leadership Chair in Child Development, Vancouver, British Columbia
Salon E/F

12:00noon – 1:30pm — Luncheons

Trainee/Recent Graduate Luncheon - Chair: Sarah Schlegel, MD
Mt. Hood

Developmental-Behavioral Pediatrics Fellowship Program Directors Luncheon - Chair: Carol Weitzman, MD - ***an extra fee applies to attend***
Eugene

Research Committee - Chairs: *Paul Wang, MD and Susan Berger, PhD*
Portland

1:30pm – 3:00pm — Concurrent Sessions

Concurrent Session 1: Continuing the Discussion with Keynote Speaker Tom Boyce
W. Thomas Boyce, MD
Salon E/F

Concurrent Session 2: Telemedicine Applications in Developmental-Behavioral Pediatrics: Experiences from the Kentucky TIDBIT℠ Program
Neelkamal S. Soares, MD, Pediatrics, Rob R. Sprang, MBA, Kentucky TeleCare, Robert J. Reese, PhD, Educational, School & Counseling Psychology, University of Kentucky, Lexington, KY
Salon AB

Concurrent Session 3 - Focus in Functioning and Participation - Using the ICF-CY
Olaf A. Kraus de Camargo, PhD, Pediatrics, Faculty of Health Sciences, McMaster University, Hamilton, ON, Canada
Salon CD

3:00pm – 3:15pm — Break
Salon G/H/I

3:15pm – 4:45pm — Concurrent Sessions

Concurrent Session 4: International Developmental-Behavioral Pediatrics: Status, Efforts and Plans
Ilgi O. Ertem, MD, Pediatrics, Ankara University School of Medicine, Ankara, Turkey, Vibha Krishnamurthy, MD, Pediatrics, Ummeed Child Development Center, Mumbai, India
Salon EF

Program Schedule

Concurrent Session 5: Infant Mental Health Assessment
Kathleen Albus, PhD, Barbara J. Howard, MD, Raymond A. Sturner, MD, Center for Promotion of Child Development, Baltimore, MD
Salon AB

Concurrent Session 6: Poster Symposia
Chair: *Carolyn Bridgemohan, MD and Paul Wang, MD*
Salon CD

The Persistence of Sleep Disturbance in Children Evaluated for Autism Spectrum Disorders: Predictive Factors and the Impact of Co-Occurring Diagnoses
Celeste E. Flachsbart, MA, Graduate Department of Clinical Psychology, George Fox University, Newberg, OR, Trevor A. Hall, PsyD, Northwest Neurobehavioral Health, Boise, ID, Mary Peterson, PhD, Wayne V. Adams, PhD, Graduate Department of Clinical Psychology, George Fox University, Newberg, OR

Missed Opportunity for Developmental Support During Hospitalization: A View from a Developing Country
Emine Bahar Bingoler Pekcici, Pediatrician, Gulden Ekici, Specialist, Emine Kocak, Specialist, Pediatrics, Kecioren Research- Training Hospital, Ankara, Turkey, Mesut Kocak, Pediatrician, Pediatrics, Kecioren Training- Research Hospital, Ankara, Turkey, Gonca Yilmaz, Pediatrician, Pediatrics, Kecioren Research- Training Hospital, Ankara, Turkey

Complementary and Alternative Medicine Use in Children with Cerebral Palsy
Laura T. Weissman, MD, Dicision of Developmental Medicine, Eugenia Chan, MD, MPH, Division of Developmental Medicine, Laurie Glader, MD, General Pediatrics, Children's Hospital Boston, Boston, MA

Structural Barriers to Early Intervention Services for Foster Children in Massachusetts
Laurel K. Leslie, MD, MPH, Medicine and Pediatrics, Tufts Medical Center, Floating Hospital for Children, Boston, MA, April D. Chang, MPA, MA, Heller School for Social Policy and Management, Brandeis University, Waltham, MA, Maia Hurley, PhD, MPP, Public Consulting Group, Boston, MA, Justeen Hyde, PhD, Institute for Community Health, Cambridge, MA, Milena Doerfer, BA, Center on Child and Family Outcomes, Tufts Medical Center, Boston, MA

Development of Children Born Prematurely: Advantage of Beginning Early Intervention in the First Year of Life
Anne M. DeBattista, MSN, PNP, Developmental and Behavioral Pediatrics, Lucile Packard Children's Hospital, Palo Alto, CA, Julie A. Slay, PhD, Lynne C. Huffman, MD, Outcomes Measurement and Research, Children's Health Council, Palo Alto, CA, Heidi M. Feldman, MD, PhD, Developmental Medicine, Stanford University, Palo Alto, CA

5:00pm – 6:00pm	Business Meeting **Salon A/B**
6:00pm – 7:00pm	Poster Session I: Meet the Author **Salon G/H/I Foyer**
7:00pm – 10:00pm	Dinner Social **Salon F**

Program Schedule

Monday, October 5, 2009

8:00am – 4:00pm — Registration
Oregon Foyer

7:00am – 9:00am — Committee Meetings
Membership - Co-Chairs: *Heidi M. Feldman, MD, PhD and Terry Stancin, PhD*
Meadowlark
Practice Issues - Co-Chairs: *Adrian D. Sandler, MD and Charles T. Morton, MD*
Douglas Fir
Program Committee - Chair: *Nancy E Lanphear, MD*
Eugene
Past Presidents (begins at 7:30am) - Chair: *Ellen Perrin, MD*
Salmon

8:30am – 3:00pm — Exhibits
Salon G/H/I

9:00am – 3:00pm — Posters Up - Session II
Salon G/H/I Foyer

9:00am – 10:15am — Plenary Session II (Abstract Presentations 6-10)
Chair: *Mark Wolraich, MD*
Salon E/F

9:00am – 9:15am — Abstract #6: Reading, Teaching, Play and Verbal Responsivity are Associated with Enhanced Attention at 24 Months
Ruee Huang, MD, Samantha B. Berkule, PhD, Benard P. Dreyer, MD, Karen Hopkins, MD, Alison Smoller, DO, Suzy Tomopoulos, MD, Alan L. Mendelsohn, MD, Pediatrics, NYU School of Medicine and Bellevue Hospital Center, New York, New York

9:15am – 9:30am — Abstract #7: Occurrence of Specific Written Learning Disorder (WLD) Among Individuals with Mild Intellectual Disability in a Population-Based Birth Cohort
Melissa B. Meier, MD, Robert G. Voigt, MD, William J. Barbaresi, MD, Pediatric and Adolescent Medicine, Robert C. Colligan, PhD, Psychiatry and Psychology, Amy L. Weaver, MS, Slavica K. Katusic, MD, Health Sciences Research, Mayo Clinic, Rochester, M

9:30am – 9:45am — Abstract #8: Is there an Association between Videogame Use and Attention and Hyperactivity Symptoms?
Anna Ocampo, MD, Eugenia Chan, MD, MPH, Division of Developmental Medicine, David Bickham, PhD, Division of Adolescent Medicine, Children's Hospital Boston, Harvard Medical School, Boston, MA

9:45am – 10:00am — Abstract #9: Neural Correlates of Reading Disability: Implications for the use of Low Achievement, Aptitude-Achievement Discrepancy, and Response to Intervention (RTI) Models to Define Poor Readers
Fumiko Hoeft, MD, PhD, Psychiatry and Behavioral Sciences, Stanford University School of Medicine, Stanford, CA

Program Schedule

10:00am – 10:15am Abstract #10: Individual Differences in Infant Speech Perception Predict Language and Pre-reading Skills Through Age 5 Years
Gina C. Cardillo Lebedeva, BA, Patricia K. Kuhl, PhD, Institute for Learning and Brain Sciences, University of Washington, Seattle, WA

10:15am – 10:30am Break
Salon G/H/I

10:30am – 11:45am Plenary Session III (Abstract Presentations 11-15)
Chair: *David Schonfeld, MD*
Salon E/F

10:30am – 10:45am Abstract #11: Multiple Perspectives of Children's Social Adjustment after a Sibling's Death from Cancer
Julie C. Grossenbacher, BS, Kimberly S. Miller, MS, Amanda L. Thompson, PhD, Kathryn Vannatta, PhD, Cynthia A. Gerhardt, PhD, Center for Biobehavioral Health, Nationwide Children's Hospital, Columbus, Ohio

10:45am – 11:00am Abstract #12: Love in the Time of HIV/AIDS: Adolescent Couples and Sexual Risk Behavior
Laurie J. Bauman, PhD, Ellen J. Silver, PhD, Dana Watnick, MPH MSSW, Pediatrics, Albert Einstein College of Medicine, Bronx, NY

11:00am – 11:15am Abstract #13: Poor Sleep in Adolescents with Chronic Pain: Outcomes from a Trial of Online Cognitive Behavioral Therapy
Tonya M. Palermo, PhD, Anna C. Wilson, PhD, Anesthesiology & Perioperative Medicine, Elizabeth Super, MD, Pediatrics, Rachel Higginbotham, MD, Sleep Disorders Medicine, Amy S. Lewandowski, PhD, Anesthesiology & Perioperative Medicine, Oregon Health & Science University, Portland, OR

11:15am – 11:30am Abstract #14: Impact of Self-Concept on Readiness for Change in a Pediatric Obese Population
Andres Mendez, BA, Kanchana De Silva, BA, Psychology, Loma Linda University, San Bernardino, CA, Vidhya Krishnamurthy, PhD, Pediatrics, Loma Linda University Children's Hospital, San Bernardino, CA, Danusia Nedilskyj, MA, Psychology, Loma Linda University, San Bernardino, CA, Kim Hamai, MD, Kiti Freier Randall, PhD, Pediatrics, Loma Linda University Children's Hospital, San Bernardino, CA

11:30am – 11:45am Abstract #15: Autism Spectrum Disorders and Health Care Expenditures: The Impact of Co-Morbidities
Georgina Peacock, MD, Djesika Amendah, PhD, NCBDDD, Centers for Disease Control and Prevention, Atlanta, GA

11:45am – 12:45pm Lunch Break

12:45pm – 1:45pm Presidential Address
A Magical History Tour of SDBP: Reflections On Deletions, Slashes, Hyphens And Developmental Context
Robin Hansen, MD
Salon E/F

Program Schedule

1:45pm – 2:00pm — Incoming Presidential Address
Leonard Rappaport, MD
Salon E/F

2:00pm – 3:00pm — Poster Session II: Meet the Author
Salon G/H/I Foyer

3:00pm – 5:00pm — Special Interest Groups

Autism SIG - Co-Chairs: *Pam High, MD and Robin Hansen, MD*
Mt. Hood

Lisa Sullivan MA, Project Coordinator, National Professional Development Center on Autism Spectrum Disorders at the M.I.N.D. Institute at UC Davis Medical Center will describe the process by which the National Professional Development Center evaluated and chose the 24 evidence based programs that are part of their training, and describe the resources that have been/are being developed and are available on the OCALI website. She will also provide an overview of the NPDC's training program for partnering states.

The second half of our SIG, facilitated by Adrian Sandler, MD, will be devoted to the role the SDBP can or should play in developing benchmarks for care in DBP. Health care reform is on the horizon. While much remains uncertain, the trends towards pay for performance and benchmarks are clear. Our ability to continue providing sustainable, high quality Developmental-Behavioral Pediatrics care will likely depend on developing appropriate benchmarks and then gathering data that demonstrate quality. The SDBP considers this issue a major priority and wishes to help members prepare for the future.

ADHD SIG - Chair: *Mark Wolraich, MD*
Columbia

A discussion lead by Mark Wolraich that will include a yearly update, how to organize the working group and develop a list of measures to include, in addition, what questions and quality insurance measures the group wants to address.

IMPORTANT!

The online CE or CME certificate will only be available through November 6, 2009. After that date, the site will be removed and certificates will no longer be available.

If you need a CE or CME certificate, you must complete the evaluation and certificate process prior to **November 6, 2009**.

Don't forget to get your certificate at www.CmeCertificateOnline.com, **password: SDBP09AM**

Notes

SDBP
Society for Developmental
& Behavioral Pediatrics

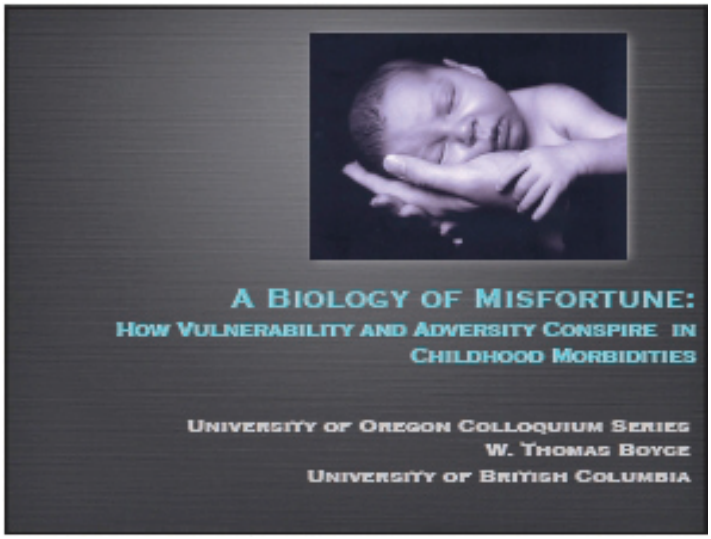
2009 SDBP Lecture Award

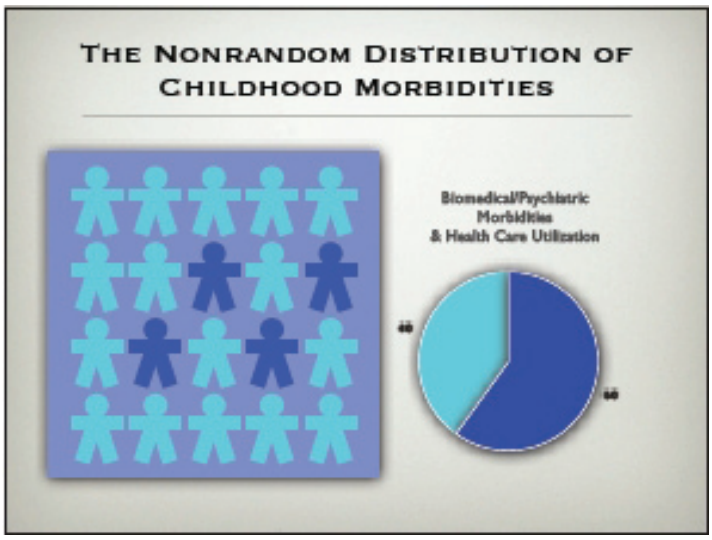
Sunday, October 4, 10:45 am - 12:00 noon

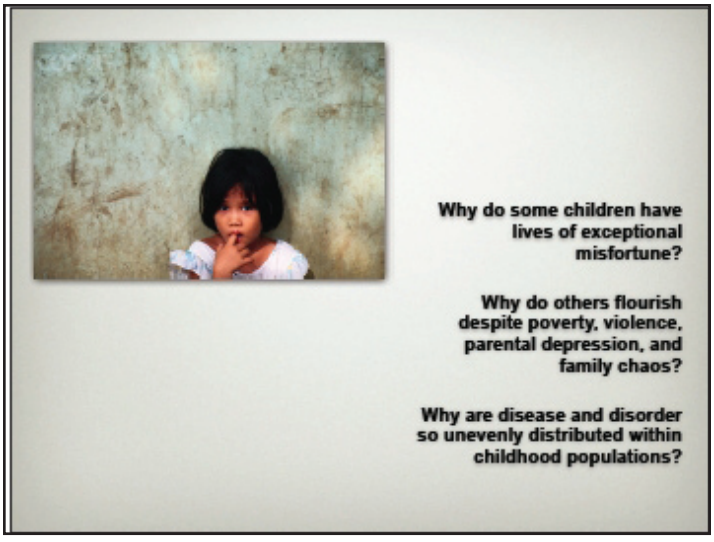
The Biology of Misfortune: How Heritable Vulnerabilities and Unavoidable Adversities Conspire in the Lives of Children

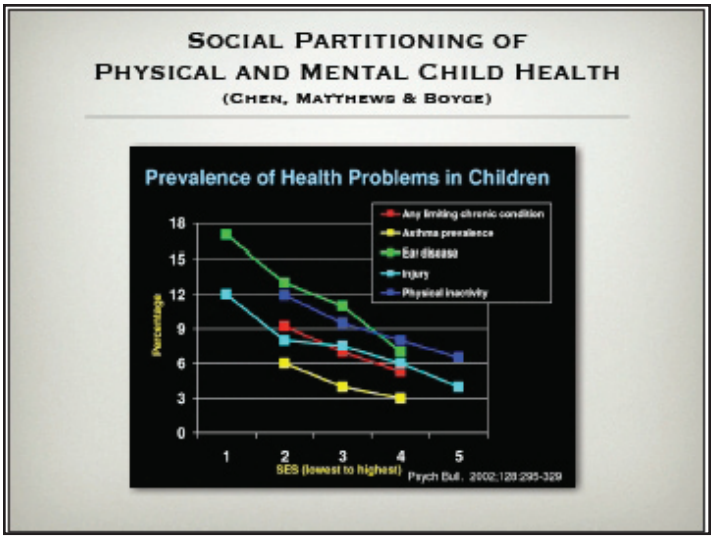
W. Thomas Boyce, MD, Sunny Hill Health Centre/ British Columbia Leadership Chair in Child Development, Vancouver, British Columbia

Salon E/F


A Biology of Misfortune:
How Vulnerability and Adversity Conspire in Childhood Morbidities
University of Oregon Colloquium Series
W. Thomas Boyce
University of British Columbia

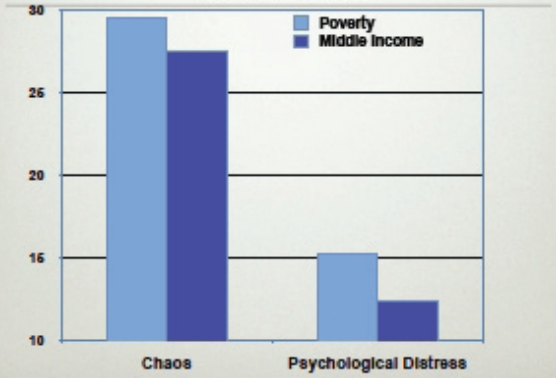

The Nonrandom Distribution of Childhood Morbidities
Biomedical/Psychiatric Morbidities & Health Care Utilization


Why do some children have lives of exceptional misfortune?
Why do others flourish despite poverty, violence, parental depression, and family chaos?
Why are disease and disorder so unevenly distributed within childhood populations?


Social Partitioning of Physical and Mental Child Health
(Chen, Matthews & Boyce)
Prevalence of Health Problems in Children
Any limiting chronic condition
Asthma prevalence
Ear disease
Injury
Physical inactivity
Percentage
18
15
12
9
6
3
0
1
2
3
4
5
SES (lowest to highest)
Psych Bull. 2002;128:295-329

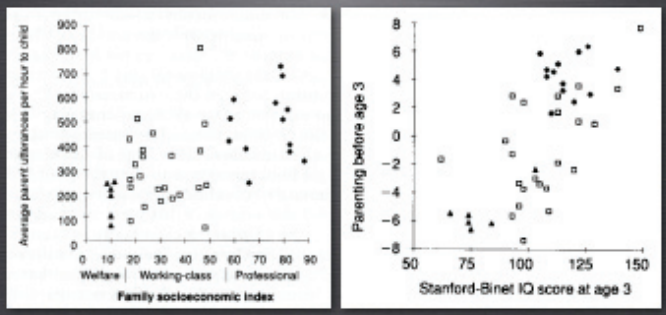
Socioeconomic Partitioning of Stressors and Adversities

Evans et al, 2005



Differences in the Everyday Lives of Children

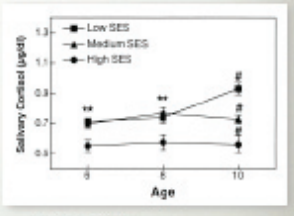
(Hart & Risley, 1995)

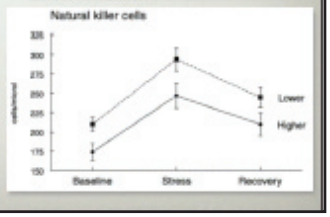


SES and Activation of Stress Pathways

Lupien et al, 2000

- Basal salivary cortisol levels among Quebec children
- NKC reactivity to mental stressors in Whitehall II study participants
- Increased adrenocortical and immune reactivity among low SES sub-sample

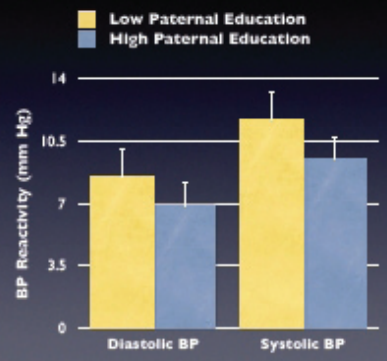


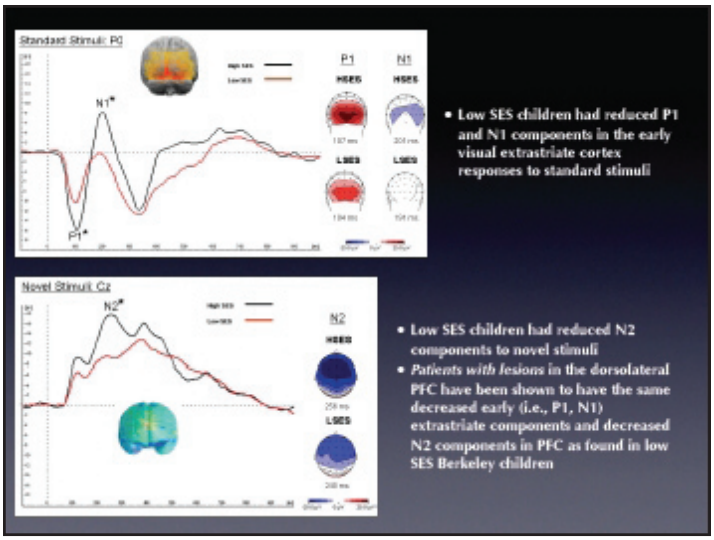


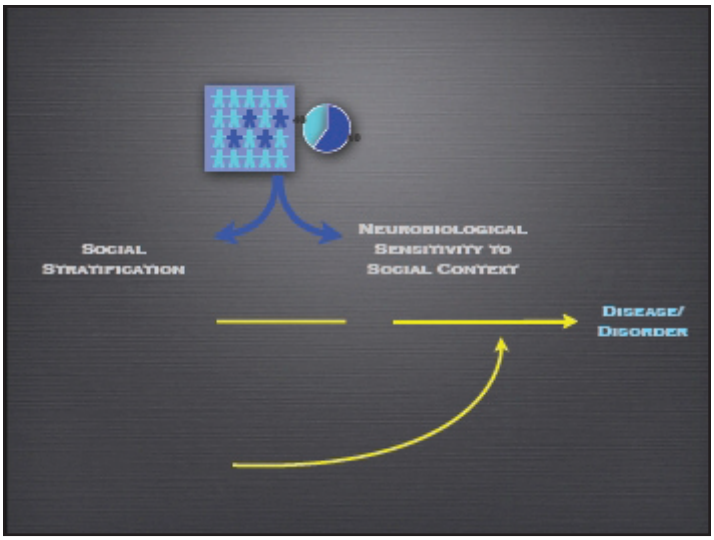
Owen et al, 2003

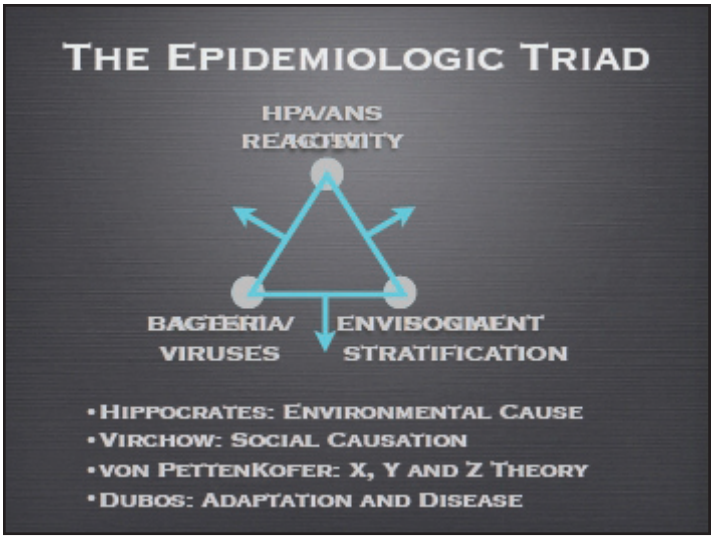
Blood Pressure Reactivity by Paternal Education Level

(RB Williams et al, 2008)




Standard Stimuli: P1
P1
N1
HSES
LSES
N1*
P1*
• Low SES children had reduced P1 and N1 components in the early visual extrastriate cortex responses to standard stimuli
Novel Stimuli: Cz
N2*
N2
HSES
LSES
• Low SES children had reduced N2 components to novel stimuli
• Patients with lesions in the dorsolateral PFC have been shown to have the same decreased early (i.e., P1, N1) extrastriate components and decreased N2 components in PFC as found in low SES Berkeley children


Social Stratification
Neurobiological Sensitivity to Social Context
Disease/ Disorder


The Epidemiologic Triad
HPA/ANS Reactivity
Bacteria/ Viruses
Environment Stratification
• Hippocrates: Environmental Cause
• Virchow: Social Causation
• von Pettenkofer: X, Y and Z Theory
• Dubos: Adaptation and Disease

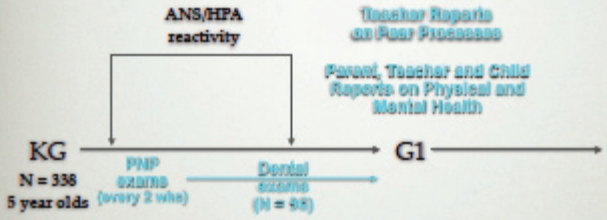
Two Illustrations
Subordination and Health
Social Partitioning of Children's Oral Health
HPA/ANS Reactivity
Bacteria/ Viruses
Social Stratification

Social Hierarchies, Stress Reactivity and Health

- Primate species form stable, linearly transitive social hierarchies
- Subordinate positions often associated with upregulated adrenocortical function, impaired immune competence, and decreased resistance to disease
- Children as young as two years of age form social orders within weeks of entering new social groups
- Are subordinate positions in early peer hierarchies associated with greater stress, exaggerated reactivity, and excessive, stress-related morbidity?

Might health disparities have more to do with your socioeconomic position relative to others or with who you believe yourself to be, rather than what you can buy or own?

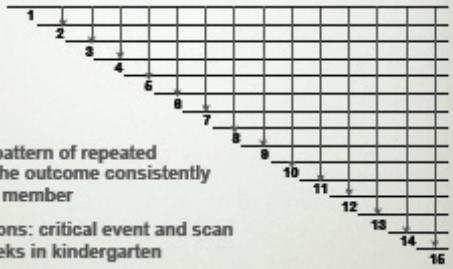
The Peers and Wellness Study (PAWS)



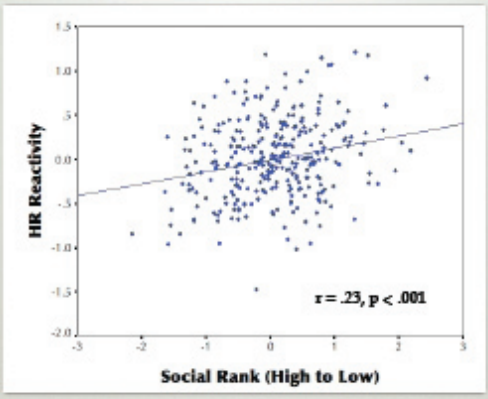
Social rank assessments:
- Critical event and scan sampling of dominance interactions
- Teacher ratings of social rank

Design Characteristics:
- Multiple informants
- Both mental and physical health outcomes
- Blinded assessment of independent and dependent variables
- Multiple measures of social rank by independent observers
- Prospective ascertainment of health outcomes

Observational Measure of Social Ordering

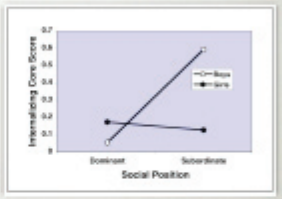


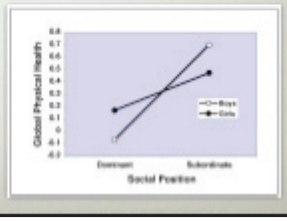
- Social dominance: a pattern of repeated encounters in which the outcome consistently favors the same dyad member
- Dominance observations: critical event and scan sampling over 3-5 weeks in kindergarten classrooms
- Following, leading, attention seeking, persuasion, imitation, threat, physical and relational aggression



Mental and Physical Health by Social Rank and Gender

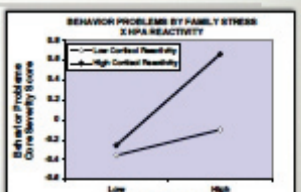
- Adjusted for SES and gender, subordinate children have higher levels of both internalizing behavior and physical health problems ($p < .05$)
- Stronger link between subordination and health problems in boys than in girls ($p < .001$)

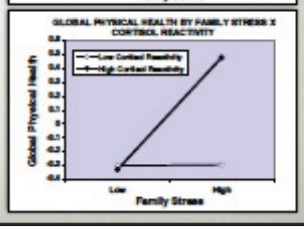




Mental and Physical Health by Family Stress and Cortisol Reactivity

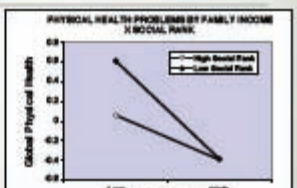
- Highest levels of parent-, teacher- and child-reported behavior problems and global physical health problems found among children with high cortisol reactivity and high levels of family stress ($p < .001$)

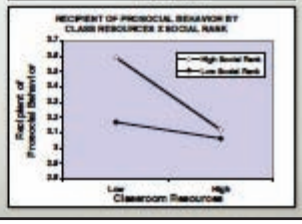




Physical Health and Prosocial Behavior Experience by Resources and Social Position

- Global physical health problems and prosocial behavior experience were no different between low and high ranking children in high family or classroom resources condition ($p < .01$)
- But for children with low family income or impoverished classroom resources, low social rank associated with more physical health problems and fewer experiences of prosocial behavior ($p < .01$)

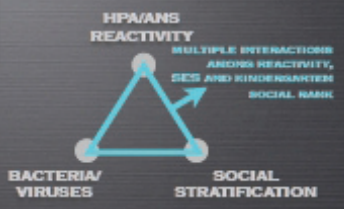


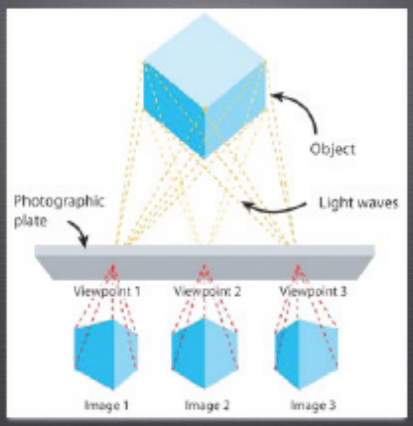


Two Illustrations

Subordination and Health

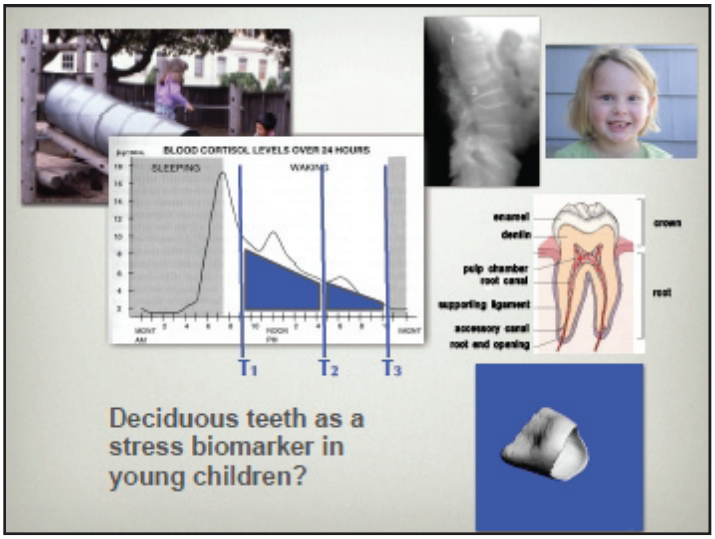
Social Partitioning of Children's Oral Health





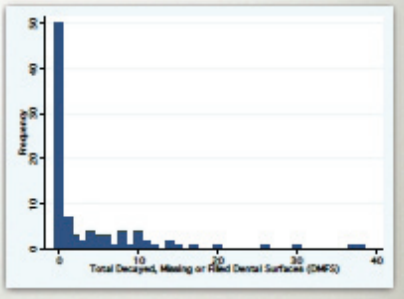
SES, Stress and Dental Pathology

- Dental caries = single most common chronic disease of childhood
- U.S. treatment cost $4.5 billion annually
- Strong SES and racial disparities
- Related to lead exposure, tobacco smoke, diet, access to fluoridated water, but these are only partial accounts
- Oral bacteria Strep mutans and Lactobacillus acidophilus
- Leading account of disparities: neglect of children's dental hygiene by low SES parents

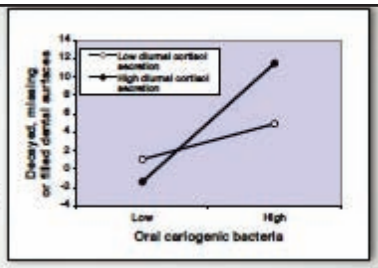


Deciduous teeth as a stress biomarker in young children?

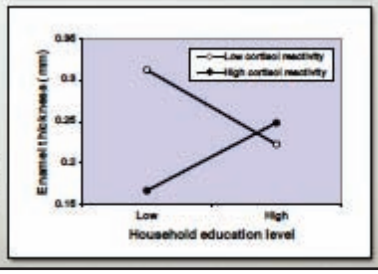
- 96 5-year-old children from PAWS Project
- One third had a filling or decay in at least one primary or secondary tooth
- Lower SES (maternal education) was significantly associated with increased financial stress, cariogenic bacteria and caries



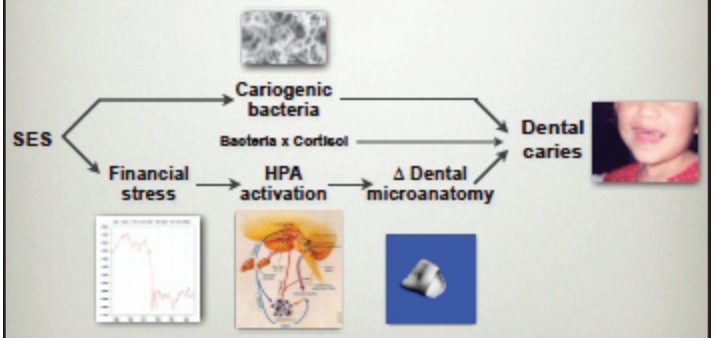
- Counts of cariogenic bacteria and diurnal salivary cortisol secretion were independently and interactively associated with dental caries
- Highest rates among children with high levels of cariogenic bacteria and high levels of salivary cortisol



- Cortisol *reactivity* and SES interactively associated with differences in dental microanatomy
- Lowest enamel thickness among children with high cortisol reactivity and low household SES



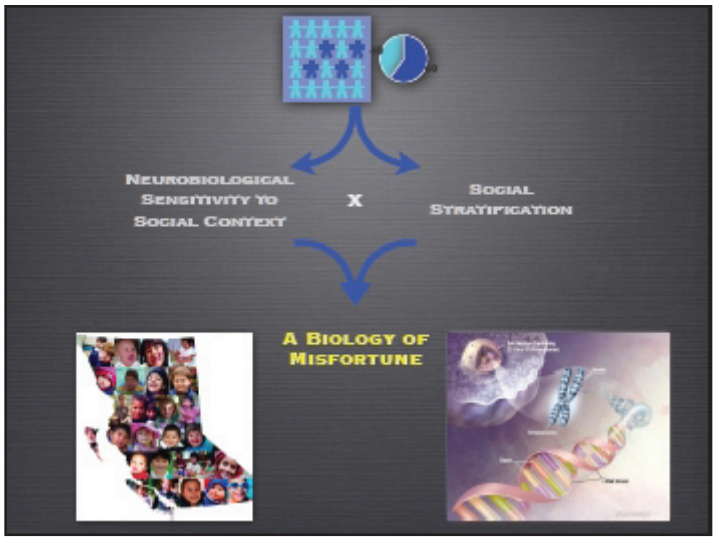
Possible Model of Sociobiological Effects on Childhood Dental Caries

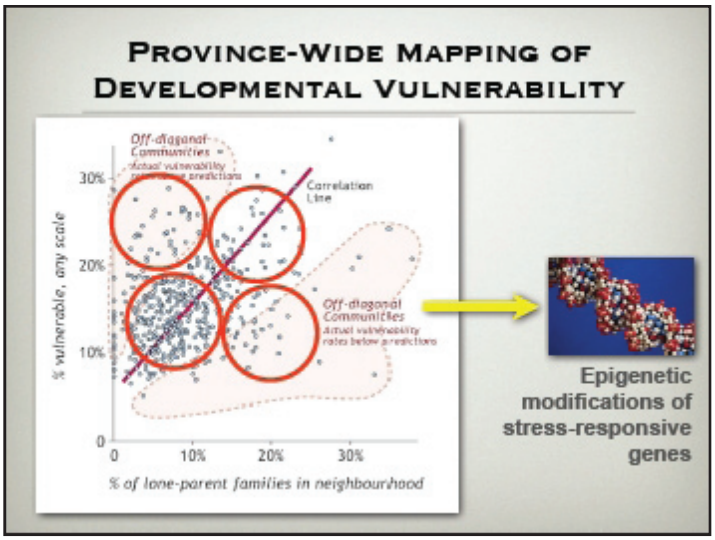


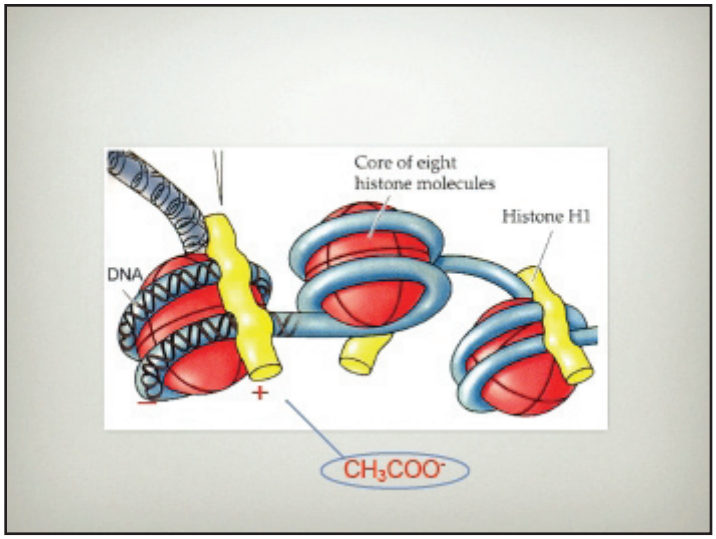
Two Illustrations

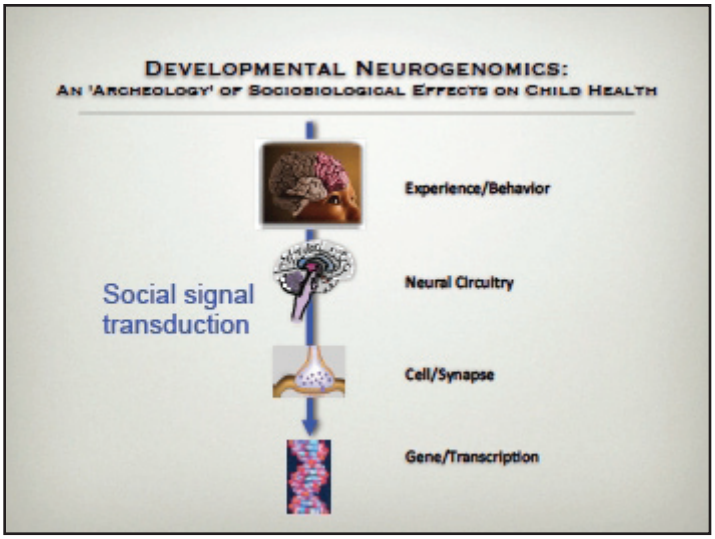
Subordination and Health

Social Partitioning of Children's Oral Health

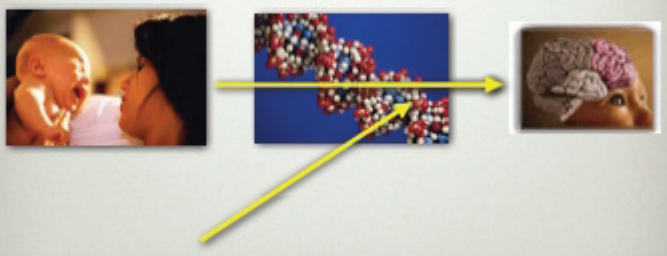

Neurobiological Sensitivity to Social Context
X
Social Stratification
A Biology of Misfortune


Province-Wide Mapping of Developmental Vulnerability
Off-diagonal Communities
Correlation Line
Off-diagonal Communities
% vulnerable, any scale
30%
20%
10%
0
0
10%
20%
30%
% of lone-parent families in neighbourhood
Epigenetic modifications of stress-responsive genes


Core of eight histone molecules
Histone H1
DNA
−
+
CH3COO-


Developmental Neurogenomics:
An 'Archeology' of Sociobiological Effects on Child Health
Social signal transduction
Experience/Behavior
Neural Circuitry
Cell/Synapse
Gene/Transcription

Social Signal Transduction v. Social Signal Effect Modification



A remarkably similar set of social circumstances characterizes people who develop tuberculosis and schizophrenia, become alcoholics, are victims of multiple accidents, or commit suicide. Common to all these people is a marginal status in society.

John Cassel, 1976

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Concurrent Session 1

Sunday, October 4, 1:30 pm - 3:00 pm

Continuing the Discussion with Keynote Speaker W. Thomas Boyce

W. Thomas Boyce, MD

Salon E/F

This will be a time for further discussion with Dr. Boyce on the topics and provocative ideas he presents as part of his keynote address.

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Concurrent Session 2

Sunday, October 4, 1:30 pm - 3:00 pm

Telemedicine Applications in Developmental-Behavioral Pediatrics: Experiences from the Kentucky TIDBIT[SM] Program

Neelkamal S. Soares, MD, Pediatrics, Rob R. Sprang, MBA, Kentucky TeleCare, Robert J. Reese, PhD, Educational, School & Counseling Psychology, University of Kentucky, Lexington, KY

Salon A/B

** Electronic version of references handout along with Camtasia version of the presentation will be provided to participants at the session. Additional copies will be provided on request to presenter Neel Soares by emailing nsoar2@uky.edu*

TELEMEDICINE APPLICATIONS IN DEVELOPMENTAL-BEHAVIORAL PEDIATRICS

(* Electronic version of references handout along with Camtasia version of the presentation will be provided to participants at the session. Additional copies will be provided on request to presenter Neel Soares by emailing nsoar2@uky.edu)

TELEMEDICINE BACKGROUND:

Nesbitt, TS; Hilty, DM; Kuenneth, CA; Siefkin, A (2000) Development of a telemedicine program: A review of 1,000 videoconferencing consultations West J Med. September; 173(3): 169–174.

Hard Data Backs up Value of Pediatric Telemedicine Program (2005)
http://www.urmc.rochester.edu/news/story/index.cfm?id=776

Bergman, DA; Sharek, PJ et al (2008) The use of telemedicine access to schools to facilitate expert assessment of children with asthma International Journal of Telemedicine and Applications Volume 2008 , No. 1

Nelson, E; Citarelli, M; Cook, D; Shaw, P (2003) Reshaping Health Care Delivery for Adolescent Parents: Healthy Steps and Telemedicine Telemedicine Journal and e-Health. Vol. 9, No. 4: 387-392

CLINICAL APPLICATIONS:

Spooner, S; Gotlieb, E (2004) Telemedicine: Pediatric Applications Pediatrics 113(6) e639-e646

Marcin, JP; Trujano, J; Sadorra, C; Dharmar, M (2009) Telemedicine in Rural Pediatric Care: The Fundamentals Pediatric Annals 38:4, 224-226

Case, RB; Groth, SJ; Anderson, TM; Byrne, GJ; Proctor, JH; Kealy, JA (1998) Telemedicine in Emergency Medicine American College of Emergency Physicians Information Paper
Rabalais, GP (2003) Telemedicine and the Pediatric Tertiary Care Center The Ochsner Journal Volume 5, Issue 2, pp 11-14
Robinson, SS; Seale, DE; Tiernan, KM; Berg, B (2003) Use of Telemedicine to Follow Special Needs Children Telemedicine Journal and e-Health. Vol. 9, No. 1: 57-61

Harper, DC (2006) Telemedicine for Children With Disabilities Children's Health Care, 35(1), pp 11–27

RESEARCH APPLICATIONS:

Antshel, K.M., & Barkley, R. (2008). Psychosocial intervention in attention deficit hyperactivity disorder. Child and Adolescent Psychiatry Clinics of North America, 17, 421-437.

Cann, W., Rogers, H., & Worley, G. (2003). Report on a program evaluation of a telephone assisted parenting support service for families living in isolated rural areas. Australian e-Journal for the Advancement of Mental Health, 2, 1-7.

de Graaf, I., Speetjens, P., Smit, F., de Wolff, M., & Tavecchio, L. Family Effectiveness of the Triple P Positive Parenting Program on parenting: A meta-analysis. Relations, 57, 553 - 566.

Glueckauf, R. L., Sobha, P., Ecklund-Johnson, E. P., Liss, H. J., Dages, P., & Carney, P. (2002). Videoconferencing-based family counseling for rural teenagers with epilepsy: Phase 1 findings. Rehabilitation Psychology, 47, 49-72.

Miller, Thomas W., and Olga Jarrín (2005). Telehealth Technology: Applications to Underserved Child and Adolescent Populations. Attention Deficit Hyperactivity Disorder Research Developments. New York, NY: Nova Science Publishers, Inc.

Nelson, E., Barnard, M., Cain, S. (2003). Treating childhood depression over videoconferencing. Telemedicine Journal and e-Health, 9, 49-55.

Reese, R.J., Conoley, C.W., & Brossart, D.F. (2002). Effectiveness of telephone counseling: A field based investigation. Journal of Counseling Psychology, 49, 233-242.

Sanders, M. (1999). Triple P Positive Parenting Program: Towards and empirically validated multilevel parenting and family support strategy for the prevention of behavior and emotional problems in children. Clinical Child and Family Psychology Review, 2, 71-90.

Sanders, M. (2007). Triple P Positive Parenting Program. In J.M. Breismeister & C.E. Shafer (Eds.) Handbook of Parent Training (pp.203-233). Hoboken, NJ: John Wiley & Sons.
Sanders, M., Cann, W., & Markie-Dadds, C. (2003).The Triple P Positive Parenting Program: A universal population-level approach to the prevention of child abuse. Child Abuse Review, 12, 3, p. 155-171.

Sanders, M., Markie-Dadds, C., & Tully, L. (2000). The Triple P- Positive Parenting Program: A comparison of enhanced, standard, and self-directed behavioral family intervention for parents of children with early onset conduct problems. Journal of Consulting and Clinical Psychology, 68, 4, p. 624-640.

Sanders, M., & Turner, K. (2005). Reflections of the challenges of effective dissemination of behavioral family interventions: Our experience with the Triple P Positive Parenting Program. Child and Adolescent Mental Health, 10, 158-169.

TELEMEDICINE RESOURCES

The Journal of Telemedicine and Telecare. Public Subscription Department, Royal Society of Medicine Press, P O Box 9002, London W1A OZA, United Kingdom.

Telemedicine: A Medical Liability White Paper. Physician Insurers Association of America (PIAA), 2275 Research Blvd, Suite 250, Rockville, MD 20850. 301-947-9000.

Telemedicine: Analysis of Market Status and Industry Trends. 800-444-4881.

Telemedicine. Office of Local and Rural Health Systems, Kansas Department of Health and Environment. 913-296-1200.

Rural Telehealth, Telemedicine, Distance Education and Informatics for Rural Health Care. US Department of Health and Human Services Office of Rural Health Policy. 301-656-3100.

Telemedicine Information Exchange http://tie.telemed.org/default.asp/

Telemedicine Today. 800-388-8632 http://telemedtoday.com/

American Telemedicine Association. (ATA) 901 15th St. NW, Ste. 230, Washington, DC 20005-2339, 202-408-0677 http://www.atameda.com/

Association of Telemedicine Service Providers (ATSP). 7276 SW Beaverton Hillsdale Hwy, Ste. 400, Portland, OR 97225, 503-22-2406. www.atsp.org

Telemedicine and Telehealth Networks. 415-905-2655. http://www.telemedmag.com/

Office for the Advancement of Telehealth http://telehealth.hrsa.gov/

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Concurrent Session 3

Sunday, October 4, 1:30 pm - 3:00 pm

Focus in Functioning and Participation - Using the ICF-CY

Olaf A. Kraus de Camargo, PhD, Pediatrics, Faculty of Health Sciences, McMaster University, Hamilton, ON, Canada

Salon C/D

Focus on Functioning and Participation

Using the ICF-CY

Olaf Kraus de Camargo

krausdc@mcmaster.ca

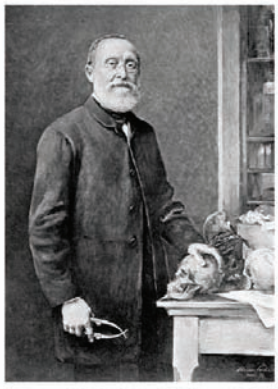
1

Outline

- Introduction to the ICF/ICF-CY
- Clinical Example
  - Clinical Diagnosis
  - Slideshow
  - Profile of Functioning and Participation
- Examples of practical application
- Conclusion

2

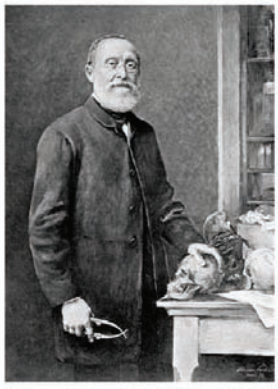
Rudolf Virchow



- 1821 - 1902
- Pathologist
- described the cellular basis for diseases
- one of the founders of modern medicine

3

Rudolf Virchow



- 1821 - 1902
- Democrat
- one of the founders of social medicine
  - „medicine is a social science“
  - sewer system in Berlin
  - initiated the building of public hospitals
  - fought for the creation of public health care

4

Models of Disease and Disability

- Lay concepts
- Scientific concepts
  - The biomedical model
  - The psychosomatic model
  - The stress-coping model
  - The behavioural model
  - The socioeconomic model
  - The risk-factors-model
  - The socio-epidemiological model
  - The bio-psycho-social model

Sozialmedizin – Grundlagen und Praxis 5. Auflage, Heiko Waller

5

The Biomedical Model

- Every disease has its *specific cause*
- Every disease is characterized by a *specific lesion* (cells, tissue, mechanical or biochemical processes)
- Diseases have typical external signs (*symptoms)* and therefore can be recognized by scientifically trained professionals (physicians)
- Diseases have a *describable* and *predictable course* and usually get worse without medical intervention.

6

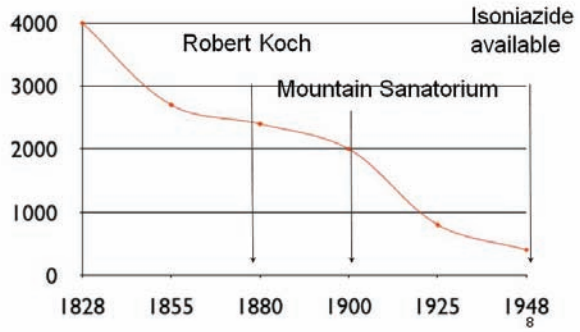
Critique of the Biomedical Model

- *Exclusively biologically* oriented, thus only reflecting a part of the causes (e.g.: risk factors & myocardial infarct)
- Is of limited value for overcoming/fighting diseases in the population (e.g.: tuberculosis)
- Is centred on the *individual* and has a *curative* orientation (neglects prevention, psycho-social determinants of disease)
- Stabilizes the *dominance of the physicians* in the Health Care System and leads to a *medicalization of society*

7

Tuberculosis

Death Rate per million



8

Models of Disease and Disability

- Lay concepts
- Scientific concepts
  - The biomedical model
  - The psychosomatic model
  - The stress-coping model
  - The behavioural model
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  - The risk-factors-model
  - The socio-epidemiological model
  - The bio-psycho-social model

Sozialmedizin – Grundlagen und Praxis 5. Auflage, Heiko Waller 10

Bio-psycho-social Model

Health condition
(Disorder or disease, ICD)

Body functions and structures ↔ Activities ↔ Participation

Environmental factors
- material
- social
- behavior

Personal factors
- age, sex
- motivation
- life style

11

Functional Health

A person is functionally healthy if – with regard to the context in which she is living (Concept of Environmental Factors) –

1. Her Body Functions (including the mental functions) and her Body Structures correspond to general accepted norms (Concept of Body Functions and Body Structures), **Bio**
2. She is able to perform the type of activities in the same way as a person without a health problem (Concept of Activities), **Psycho**
3. She is able to develop her existence in all domains that are important to her in the same way and the same extent as it would be expected to be by a person without impairments of body functions or structures or restrictions in activities. (Concept of participation) **Social**

12

Functional Health and Contextual Factors

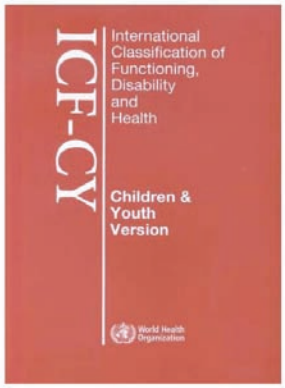
Contextual factors (Environmental factors, personal factors) influence the functional health:

- **Positively (Facilitators)**
- **Negatively (Barriers)**

➢ Therefore it is always necessary to take into consideration the contextual factors when evaluating the functional health status of a person.

13

ICF-CY



- Body Functions
  - Organ Systems
- Body Structures
  - Organ Systems
- Activities and Participation
  - Learning and Applying Knowledge
  - General Tasks and Demands
  - Communication
  - Mobility
  - Self-Care
  - Domestic Life
  - Interpersonal Interactions and Relationsships
  - Major Life Areas
  - Community, Social and Civic Life
- Environmental Factors
  - Products and Technology
  - Natural Environment and Human-made Changes to Environment
  - Support and Relationships
  - Attitudes
  - Services, Systems and Policies

1671 items

14

Applications of the ICF

- A **statistical tool** – in the collection and recording of data (e.g. in population studies and surveys or in management information systems);
- A **research tool** – to measure outcomes, quality of life or environmental factors;
- A **clinical tool** – in the assessment of needs, in matching treatments with specific conditions, vocational assessment, rehabilitation and outcome evaluation;
- A **social policy tool** – in social security planning, compensation systems and policy design and implementation;
- An **educational tool** – in curriculum design and to raise awareness and undertake social action

15

A girl with a „complicated“ life

16

We try to establish a diagnosis!

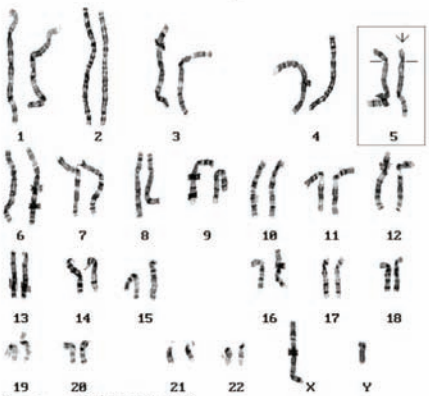
17

Symptoms

- Hypertelorism (wide set eyes) (263*)
- Epicanthal folds (151*)
- Round face (68*)
- Microcephaly (554*)
- Low birth weight (301*)
- Low set and malformed ears (239*)
- Typical crying (14*)

*hits in OMIM

Cri-du-Chat Syndrome



Karyotype: 46,XY,del(5)(p14.2)

19

Now that we know the diagnosis, how do we care?

- *„The deletion..results in the characteristic facial features and the severe mental retardation.“**

- Why is that a „complicated“ life?
- How can we assess this?
- How do we get the „whole picture“?

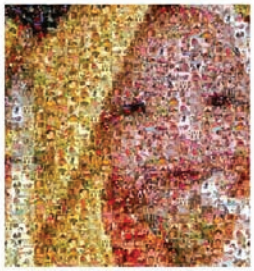
*Child Neurology, Menkes et al. 7th ed. 2005

20

21

The whole picture

- Impression
- Information
- Assessment
- Measurement
- Research
- etc.



22

"Basically, we're all saying to say the same thing."

It takes a team that communicates to focus the whole picture! 24

Team

- early childhood education workers
- occupational therapists
- parents
- physicians in their different roles
- physiotherapists
- psychologists
- social workers
- speech and language pathologists
- technicians
- teachers
- ...

25

The ICF and Developmental Paediatrics - Strategies of Care

Acute Care

Developmental Care

26

The ICF and Developmental Paediatrics - Strategies of Care

Acute Care

Strategy

curative,
cause oriented

optimizing,
bio-psycho-social

Developmental Care

27

The ICF and Developmental Paediatrics - Strategies of Care

Acute Care

Strategy

curative,
cause oriented

optimizing,
bio-psycho-social

Patients/Parents

passive,
enduring, „patient"

active, responsible

Developmental Care

28

The ICF and Developmental Paediatrics - Strategies of Care

Acute Care

Strategy	Patients/Parents	Physician
curative, cause oriented	passive, enduring, „patient"	giving orders, „in charge"
optimizing, bio-psycho-social	active, responsible	counselling accompanying member of a team

Developmental Care

29

The ICF and Developmental Paediatrics - Strategies of Care

Acute ⟷ Integrated Care ⟷ Developmental

30

Body Functions

- b140-b189 SPECIFIC MENTAL FUNCTIONS
  - *b147 Psychomotor functions*
    - b1472 Organization of psychomotor functions
    - b1473 Manual dominance
    - b1474 Lateral dominance
  - *b163 Basic cognitive functions*
  - *b167 Mental functions of language*
    - b1670 Reception of language
      - b16703 Reception of gestural language
    - b1671 Expression of language
      - b16703 Expression of gestural language

31

Activities and Participation

- d880 ENGAGEMENT IN PLAY
  - d8800 Solitary play
  - d8801 Onlooker play
  - d8802 Parallel play
  - d8803 Shared cooperative play
- d9 COMMUNITY, SOCIAL AND CIVIC LIFE
  - *d910 Community life*
    - d9103 Informal community life

32

Environmental factors

- e1 PRODUCTS AND TECHNOLOGY
  - *e110 Products or substances for personal consumption*
    - e1152 Products and technology used for play
      - e11520 General products and technology for play
      - e11521 Adapted products and technology for play
  - *e150 Design, construction and building products and technology of buildings for public use*
    - e1503 Design, construction and building products and technology for physical safety of persons in buildings for public use
  - *e155 Design, construction and building products and technology of buildings for private use*
    - e1553 Design, construction and building products and technology for physical safety of persons in buildings for private use
- e5 SERVICES, SYSTEMS AND POLICIES
  - *e570 Social security services, systems and policies*
    - e5750 General social support services
      - e57500 Informal care of child or adult by family and friends
      - e57501 Family day care provided in home of service provider
      - e57502 Child or adult care service centre - profit and non-profit

ICF - What is a disability?

- **Disability** (general meaning)
  Negative interaction between a person (with a health condition, ICD) and her contextual factors upon her **Functioning**
- **Disability** (specific meaning)
  Negative interaction between a person (with a health condition, ICD) and her contextual factors upon her **Participation** in a specific life domain

34

Julia´s Profile

- Diagnoses (ICD):
  - Q93.4 Deletion of short arm of chromosome 5
  - Q17.3 Other misshapen ear
  - H50.1 Divergent strabismus
  - F80.1 Expressive language disorder
  - F80.2 Receptive language disorder
  - F71.0 Moderate mental retardation
  - G47.0 Disorder of initiating and maintaining sleep

35

Julia´s Profile

- Body Structures
- Body Functions:
  - mental functions
  - voice and speech functions
  - neuromuscular and movement-related functions

36

Julia´s Profile

- Activities and Participation
  - learning and applying knowledge
  - carrying out a daily routine
  - conversation and use of communication devices and techniques
  - carrying and moving objects
  - walking and moving
  - toiletting
  - eating
  - household tasks
  - general interpersonal relationships
  - particular interpersonal relationships
  - informal education
  - preschool education
  - recreation and leisure
  - religion and spirituality

37

Julia´s Profile

- Environmental Factors
  - Products and Technology
  - Support and Relationships
  - Attitudes
  - Services, Systems and Policies

38

Use of the Profile

- Overview of the life of a patient in his environment and the possible complications
- Possibility to point out strengths, facilitators
- Tool to determine goals of intervention
- Common base for **collaboration**
- Common language for **communication**

39

Managing

- Children Treatment Center

created clinical practice pathway by:

–grouping patients according to functional abilities (ICF) rather then diagnoses

–identify key junctures (transitions, changes in the environment) that have an impact on service needs

–more efficient distribution of workload

ERINOAKiDS

40

Ethical Guidelines

- ICF should always be used so as to respect the inherent value and autonomy of individual persons.
- ICF should never be used to label people or otherwise identify them solely in terms of one or more disability categories.
- In clinical settings, ICF should always be used with the full knowledge, cooperation, and consent of the persons whose levels of functioning are being classified. If limitations of an individual's capacity preclude this involvement, the individual's advocate should be an active participant.
- The information coded using ICF should be viewed as personal information and subject to recognized rules of confidentiality appropriate for the manner in which the data will be used.

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Limitations of the ICF

- The ICF is not a classification of functional diagnoses

The ICF is a form of describing functional symptoms and findings on three levels:

- Lesions of functions and structures
- Impairments of certain activities
- Restrictions of participation in certain life domains

- The ICF is not an assessment tool!
- On the basis of the ICF such tools can be created or existing tools developed further.

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Core-Sets

- Are a special selection of items from the ICF that might be more relevant for a specific health condition or age range
  - Arthritis
  - Diabetes
  - Breast cancer
  - Stroke
  - Children

43

Checklists

- Are restricted regarding their capacity to graduate the deficiencies
- Allow a quick overview of the different problems and available resources
- Can be used for planning interventions

44

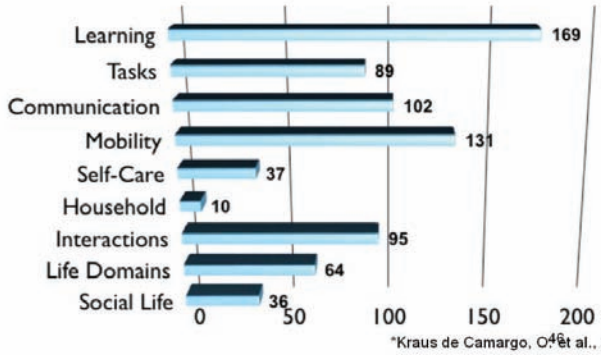
ICF-Checklist for Children in Early Intervention*

- Simplified coding:
  - 1: absence of deficiency, disorder or barrier
  - 2: presence of deficiency, disorder or barrier
  - 3: further investigation is necessary
  - 4: goal area of intervention
  - 5: not applicable

*Kraus de Camargo, O. et al., 2007

45

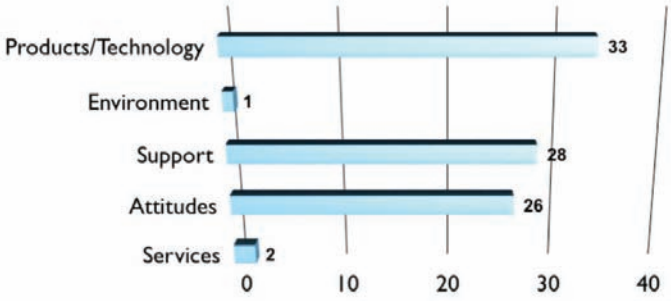
Frequency of Goals in Early Intervention* - Activities and Participation



*Kraus de Camargo, O. et al., 2007

46

Frequency of Goals in Early Intervention* - Environmental factors



*Kraus de Camargo, O. et al., 2007

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Summary

- The ICF provides a more complete picture of the life of our patients
- The ICF helps in identifying goals for intervention
- The ICF can be used at the individual level, the service provider level and on the health care level
- The ICF is a common language for all health care and related professionals
- We should learn this common language to develop our different roles as physicians!

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- Julia & her family
- Red Garland, „Hey Now", from the album „Groovy"

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Helen Keller with tutor Annie Sullivan

Thank you for your attention!

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SDBP
Society for Developmental
& Behavioral Pediatrics

Concurrent Session 4

Sunday, October 4, 3:15 pm - 4:45 pm

International Developmental-Behavioral Pediatrics: Status, Efforts and Plans

Ilgi O. Ertem, MD, Pediatrics, Ankara University School of Medicine, Ankara, Turkey, Vibha Krishnamurthy, MD, Pediatrics, Ummeed Child Development Center, Mumbai, India

Salon E/F

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A Guide for Monitoring Child Development in Low- and Middle-Income Countries

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The online version of this article, along with updated information and services, is located on the World Wide Web at:
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ARTICLE

A Guide for Monitoring Child Development in Low- and Middle-Income Countries

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The authors have indicated they have no financial relationships relevant to this article to disclose.

ABSTRACT

OBJECTIVE. In low- and middle-income countries, methods for clinicians to address difficulties in language, social-emotional, cognitive, behavioral, or neuromotor development during early childhood are lacking. To fill this gap, we designed, in Turkey, the Guide for Monitoring Child Development, which aims to aid clinicians in monitoring and supporting child development and the early detection and management of developmental difficulties. The Guide for Monitoring Child Development monitoring component is a practical, open-ended interview that catalyzes communication between clinicians and caregivers and obtains a portrayal of the child's development. We report on the development and psychometric properties of the Guide for Monitoring Child Development monitoring component for children aged 0 to 24 months.

METHODS. We examined the ages of attainment of Guide for Monitoring Child Development milestones and internal consistency in a cross-sectional study of healthy children receiving well-child care (study 1). In 2 clinical samples, we studied the interrater reliability between medical students and a child development specialist administering the guide (study 2), as well as the concurrent validity of the guide administered during a health visit and a comprehensive developmental assessment (study 3).

RESULTS. In study 1 ($N = 510$), item-total scale correlations ranged from 0.28 to 0.91. An age-dependent attainment pattern was seen in all of the milestones. In study 2 ($N = 92$), interrater reliability between medical-student pairs and between the child development specialist and students was high (kappa scores were 0.83–0.88). In study 3 ($N = 79$), the sensitivity, specificity, and positive and negative predictive values were 0.88, 0.93, 0.84, and 0.94, respectively.

CONCLUSIONS. The Guide for Monitoring Child Development is an innovative method for monitoring child development that is designed specifically for use by health care providers in low- and middle-income countries. Studies in Turkey provide preliminary evidence for its reliability and validity.

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Key Words
child development, developing countries, surveillance and monitoring, developmental screening, screening tools

Abbreviations
LAMI—low and middle income
GMCD—Guide for Monitoring Child Development
WHO—World Health Organization
UNICEF—United Nations International Children's Education Fund

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In low- and middle-income (LAMI) countries,[1] as childhood mortality has decreased, developmental difficulties, including disabilities, disorders, or delays in cognitive, language, social-emotional, behavioral, or neuromotor development that begin during early childhood are increasingly recognized as important contributors to morbidity across the life span.[2–6] In high-income countries, an important strategy for the early detection and management of developmental difficulties has been the integration of developmental monitoring of children (ie, standardized screening and surveillance) into health care.[7–12] In LAMI countries, health services are often the only professional services available to young children and offer, particularly during the first 2 years of life, important opportunities to address child development.[3,4,13] Interventions to enhance the development of young children are increasingly becoming available in developing countries and include low-cost strategies, such as addressing malnutrition and iron

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deficiency, improving caregiver-child relationships, increasing psychosocial stimulation, and establishing community-based rehabilitation.[13–17] To date, however, methods designed specifically for developmental monitoring of young children by health care providers in LAMI countries are lacking.[2–6,13,14,18]

Research in Western countries has shown that children and their caregivers benefit from developmental monitoring during health visits in a number of ways: (1) if the child is developing typically, clinicians can provide reassurance, support parenting competence, and provide anticipatory guidance; (2) if the child is at developmental risk or has an established or emerging delay or difficulty, this can be detected early and addressed; and (3) in both situations, caregivers can be supported and informed about how to enhance their child's development.[7–12] At a population level, developmental monitoring can inform policy about rates of developmental difficulties so that existing interventions can be appropriately allocated, their effect can be monitored, and the need for further interventions can be determined.[2,5–6,13,17]

In the United States, the implementation of developmental monitoring and the early detection of developmental difficulties have made only limited progress without the use of standardized instruments and protocols; therefore, the American Academy of Pediatrics currently recommends that standardized instruments be used.[7,19,20] Such instruments have evolved in 2 areas in the past 40 years.[21–24] First, language, social-emotional, cognitive, and behavioral development, as well as functional capacity, have become essential constructs that are incorporated into instruments. Second, the importance of caregiver-clinician communication and partnership has been reflected in the methods used for developmental monitoring. Based on the family centered care initiative in pediatrics and advances in early intervention, models in which a parent watches while a clinician "tests" the child have evolved to models in which a caregiver and clinician use instruments to "talk" about the child's development. Many instruments that ask caregivers about their concerns regarding their child's development and/or whether their child has achieved certain developmental milestones have been shown to have appropriate psychometric properties as screening tools and are now recommended and widely used in Western countries.[22–24]

Studies from LAMI countries suggest that caregivers[25–27] and health care providers[28–30] may not be well equipped with knowledge about early childhood development, and, therefore, the need for instruments in the monitoring process may be even more important than in high-income countries. Ideally, in both high-income and LAMI countries, methods used for developmental monitoring in health systems should (1) be based on well-supported current theories and conceptualizations of child development, (2) be reliable and valid, (3) be linked directly to frameworks for supporting development and managing developmental problems when they are detected, (4) be brief, easy to learn, and easy to administer, and (5) require minimal cost, equipment, and paperwork.

Several differences between high-income and LAMI countries need to be addressed, however, when adapting or developing instruments that can be used in LAMI countries. First, low caregiver literacy limits the use of written questionnaires and checklists. Second, in populations where developmental difficulties are prevalent, caregivers may not have an appropriate reference as to how children should typically develop. Although identifying caregivers' concerns is of key importance in developmental monitoring, reliance on this method alone for early identification of developmental difficulties in LAMI countries requires further examination.[27,31] Third, the use of structured questions or checklists about milestones may also be problematic. Caregivers may not readily admit that their child has not reached a milestone and may provide socially desirable answers, particularly if they do not receive health care from the same trusted clinician at each visit, do not believe that interventions exist, or are concerned about stigma related to developmental difficulties. Fourth, the alternative reliance on "child testing" methods is neither practical nor desirable. Caregivers do know their children best, and even more so than in Western countries, they are the key resource to support children's development. Therefore, family centered methods for monitoring child development that have evolved in the West should be the methods of choice for developing countries as well. Testing of the child most often leaves the caregiver "watching" rather than participating in the evaluation, and, therefore, this approach does not capitalize on the partnership of clinicians with caregivers. Furthermore, it is difficult to elicit the optimal developmental functioning of young children during health care visits. When objects are needed to elicit children's skills, the cleanliness and maintenance of such objects may be a concern in LAMI countries. Fifth, instruments that are to be used across LAMI countries need to include universal and not culture-specific concepts in child development. Sixth, monitoring child development is a new concept for health care providers in LAMI countries, and methods that are to facilitate monitoring should build on existing protocols (such as growth monitoring and immunizations) and clinicians' skills (such as clinician-patient communication).

A number of instruments that were designed to involve caregivers in the monitoring process and were developed in Western countries[32–36] have the potential to be adapted for use in developing countries. None of these instruments, however, has been designed specifically to address concerns in developing countries. Therefore, the Guide for Monitoring Child Development (GMCD) was developed for use by health care providers in LAMI countries to monitor the development of children 0.0–3.5 years of age. The GMCD has 3 components: (1) the monitoring development component, which is reported here; (2) the supporting development component, which is an expanded version of the World Health Organization (WHO)/United Nations International Children's Education Fund (UNICEF) Care for Development Intervention[15,37] and has been incorporated by the WHO into the newly launched International Growth Stan-

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TABLE 1 GMCD Questions and Examples of Milestones

Developmental Domains and Interview Questions	6–7 mo	8–10 mo
1. Concerns[32]: "By development I mean her learning, understanding, communicating, relationships, her behavior and emotions, how she uses her fingers and hands, legs and body, her hearing and vision. Do you have any concerns about Ayse's development in any of these areas?"		
2. Expressive language and communication: "Tell me about how she communicates. How does Ayse let you know when she wants something?"	Makes "ga, gu, da, ba," sounds (joins vowels and consonants)	Repeats syllables like "da-da" Uses gestures like shaking head in protest
3. Receptive language: "Tell me examples of what she can understand when you talk to her?"	When caregiver speaks listens, looks at her mouth Recognizes and prefers caregiver's voice Responds with sounds when talked to	Understands repeated simple words like "mummy" "no"
4. Fine and gross motor: "What does Ayse do with her hands and fingers and with her legs and body?"	Reaches with hands Holds onto toys or objects Sits with support Bears weight on legs	Transfers from hand to hand Picks up small objects like raisins Turns front to back to front Sits without support
5. Relationship (social-emotional): "Tell me about Ayse's relationships with people she knows. What about strangers, how does she relate to them?"	Recognizes caregivers, reaches to them, smiles, inspects their faces	Reacts when mother leaves May turn away from strangers in anxiety, caution, shyness or fear
6. Play (social-emotional, cognitive): "I'd like to learn about her play, can you give me examples?"	Regards hands Shakes objects Responds to "peek-a-boo"	Inspects toys with curiosity Throws, bangs toys, objects Looks for objects Plays "peek-a-boo"
7. Self-help skills: "What kinds of things can Ayse do for herself now, like eating or dressing?"		

dards training package[38]; and (3) the managing developmental difficulties component, which has been adopted by the Turkish Ministry of Health and UNICEF-Turkey to be used in a nationwide training program on child development for primary health care providers. We report here a description of the GMCD monitoring development component, referred to as the GMCD, and the results of research in Turkey on its development, interrater reliability, and validity for children aged 0 to 24 months.

METHODS

Description of the GMCD

The GMCD aims to provide a method for developmental monitoring and early detection of developmental difficulties in LAMI countries and is rooted in the ecological and transactional conceptualizations of child development,[39,40] family centered care,[41] and relationship- and strengths-based developmental assessment.[21] To develop the GMCD, a comprehensive search of the literature was conducted, and consultations were held with experts on child development in both Western and developing countries. Core ideas were adapted from 3 seminal models: New Visions for Developmental Assessment of Young Children,[21] Bright Future Guidelines,[42] and the WHO International Classification of Functioning,[43] as well as 2 well-known and widely used instruments, the Parents' Evaluation of Developmental Status[32] and the Vineland Scales of Adaptive Behavior.[33] The open-ended interview technique was chosen as the administration method for the GMCD. This technique is based on the fundamental and universal principles of human communication and recall of information,[44] builds on patient-centered communication techniques,[45,46] avoids assumptions about what the child should be doing, lessens the possibility that caregivers will provide socially desirable answers, and is designed to be culturally neutral.

The GMCD is a brief, open-ended, precoded interview with the primary caregiver. The interview is administered in the following standard way. Caregivers are first provided with an explanation of the reason for the interview, and caregiver interest and cooperation are elicited. Table 1 shows examples of the questions of the GMCD and the way it is structured. The first question is adapted from the Parents' Evaluation of Developmental Status[32] and relates to identifying parental concerns. If the caregiver expresses concerns, these are explored further before the interview is continued. Next, the clinician explains the importance of obtaining a portrayal of the child's typical functioning and asks the 6 open-ended questions shown in Table 1. The questions (2–7) relate to the following developmental domains: (question 2) ex-

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pressive language and communication, (question 3) receptive language, (question 4) gross and fine motor, (question 5) relationship (social-emotional), (question 6) play, and (question 7) self-help skills (for children older than 12 months). For each of the 6 questions, there are specific precoded milestones. Caregiver's spontaneous responses to the open-ended questions are applied to the milestones whenever possible. Additional questions are used when necessary to prompt responses to specific milestones. The GMCD does not include questions for the cognitive domain, because for young children it is difficult for a caregiver to narrate aspects of cognitive development separately from language, relating, and play skills. Cognitive development is addressed in the domains and in the first question, specifically asking if the caregiver is concerned about the child's cognitive development, using explanations such as "thinking," "using his mind," and "intelligence."

The GMCD form, which is used to ascertain whether a child is developing typically and to document the monitoring, is composed of 2 tables provided on each side of a single sheet. The questions are placed in rows, the 8 age ranges (1–3, 4–5, 6–7, 8–10, 11–13, 14–16, 17–19, and 20–24 months) are placed in columns, and the precoded developmental milestones are in the cells. The age ranges were selected based on the schedules for monitoring growth and providing immunizations recommended by the WHO. The milestones were constructed by the following method. We pooled all of the developmental milestones from 5 previously standardized and validated developmental screening or assessment instruments: Denver II,[47] Vineland,[33] Brigance Screening Test,[48] Ages and Stages Questionnaire,[34] and Bayley Scales of Infant Development Second Edition (Bayley II).[49] Three experts in child development selected milestones that could be easily observed and reported by caregivers in response to the GMCD questions and that were thought to be universal (eg, interactive play such as peek-a-boo) and not culture specific (eg, playing with a mirror). A pilot study was conducted to assess the appropriateness and comprehension of the questions and milestones. This pilot study included 150 caregivers of children referred to Ankara University from many regions of Turkey. Some of the GMCD milestones were subsequently revised based on caregivers' narrations of their child's development.

Three studies were conducted in Turkey on the construction and psychometric properties of the GMCD, for children aged 0–24 months. Study 1 aimed to determine the ages of attainment of the GMCD milestones, study 2 sought to examine ease of administration and interrater reliability, and study 3 served to examine concurrent validity of the GMCD with a comprehensive developmental assessment.

Study 1: Ages of Attainment of the GMCD Milestones

Participants

We used the WHO recommendations to select the study sample. The WHO recommends that, in populations with a high prevalence of conditions that are hazardous to child health and development (such as malnutrition, low birth weight, chronic infections including HIV/AIDS, parasitic infestations, iron deficiency anemia, and perinatal complications), references for monitoring growth and development should be based on what the WHO refers to as a "prescriptive sample" of healthy, thriving children without these risks rather than geographic, whole-population-based references.[50,51] The participants were children who, from birth onward, had received preventive health care at 2 university-affiliated community well-child care clinics in Ankara (Ankara and Baskent Universities). The intended sample size was 30 children of each gender in 8 age ranges under 25 months, resulting in a total of 480 children. All of the eligible children were enrolled and participated in the study. The pediatricians in the clinics who conducted the well-child visit examination completed the health record. At the end of the visit, a developmental-behavioral pediatrician reviewed the health records and applied the following inclusion criteria to identify the final sample that was used in the analyses. Children were included in the sample if they were born as healthy singletons with birth weight ≥2500 g and gestational age ≥37 weeks; their growth had been between fifth to 95th percentiles since birth; they had received and complied with the free iron prophylaxis available to children in Turkey after 6 months of age or their hemoglobin screens had been normal within 1 month of the study; and the pediatric evaluation and chart review concluded that they were healthy, growing normally, and had not had any health-related problems since birth apart from acute minor illnesses.

Procedures

Four researchers were trained in the administration of the GMCD and reached 95% interrater agreement on 25 consecutive administrations. At both sites, eligible caregivers were invited to participate in the study while they were waiting for their health visit or after the visit. Caregivers were informed that this was a study to obtain normative information about child development. The standard open-ended method of administration was used; 1 modification was made for the study. To avoid asking caregivers about milestones normally occurring much earlier or later than the age of the child, milestones were temporarily placed in age rows based on the following process. The 5 instruments[33,34,47–49] used to construct the GMCD were examined, and the milestone was placed in the age column in which ≥90% of children in ≥1 of the instruments achieved this milestone. After the caregivers' spontaneous responses were recorded, they were told that there may be other things that the child may or may not be doing. Milestones 1 below and 1 above the child's age range were read to the caregiver who was then asked whether the child had attained these milestones.

Data Analysis

Internal consistency of the GMCD was examined by computing item-total score correlation for each mile-

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stone and Cronbach's α for each domain and the total instrument. Item-total scale correlations of >.25 and Cronbach's α of >.70 were considered appropriate.[52] The presence of an age-dependent developmental pattern was examined using Pearson correlation coefficients for each domain score and age. The χ^2 test was used to examine whether significant differences existed between girls and boys in the ages of attainment of developmental milestones. We computed the age at which >90% of the study sample performed each milestone, which was then placed in the corresponding age column.

Study 2: Ease of Administration and Interrater Reliability

In study 2, 1118 fifth-year medical students at Ankara University School of Medicine were trained in the use of the GMCD; the training involved a 1.0-hour seminar and a 1.5-hour practicum. Of these, 184 randomly selected fifth-year students were paired as partners. The paired students administered the GMCD to caregivers of 92 children aged 0–24 months who received health care at Ankara University School of Medicine Department of Pediatrics. While 1 student administered the GMCD, the other observed, and both completed the GMCD independently; administration time was recorded. A child development specialist with extensive experience on the GMCD administered the GMCD to the same caregivers within 48 hours of the medical students. The students completed a questionnaire related to ease of administration, and the child development specialist asked caregivers questions about the ease of responding to the GMCD. Percentage of agreement and κ were used to examine interrater reliability for the overall GMCD result. We used as our criterion for interrater reliability a κ value of $\geq$0.60, defining a level of "good" chance-corrected interrater agreement.[52]

Study 3: Concurrent Validity

Preliminary criteria for interpreting the GMCD were developed to examine concurrent validity. If the child was reported to exhibit all of the milestones at age level, the GMCD interpretation was classified as "appropriate for age." If the child did not demonstrate $\geq$1 of the age-appropriate milestones, the GMCD interpretation was classified as "requires follow-up evaluation with or without intervention." In a cross-sectional study, we examined the concurrent validity of the GMCD. Infants aged 1–24 months who had been born with birth weight $\leq$1500 g, treated in the NICU at Ankara University, and who came for health visits to the follow-up clinic were enrolled consecutively over a 6-month period. A pediatrician with no specific training in child development but trained in the use of the GMCD administered the GMCD at the time of a clinic visit. An experienced developmental-behavioral pediatrician, "blinded" to the GMCD results, conducted a comprehensive developmental assessment within 48 hours. This evaluation included a developmental history, play observations, neurologic examination, and the Bayley II.[49] The comprehensive evaluation was considered positive if the clinician decided that the child needed developmental interventions or the Bayley Mental Index or Psychomotor Development Index was 2 SDs below the mean of the US reference (score < 70). κ, sensitivity, and specificity were used to examine concurrent validity.[53]

For all 3 of the studies, data were analyzed using SPSS 11.0 (SPSS Inc, Chicago, IL).[54] Written, informed consent from caregivers was obtained for all 3 of the studies, which were approved by Ankara University School of Medicine Ethics Committee.

TABLE 2 Sociodemographic Characteristics of participants in Studies 1, 2, and 3

Sociodemographic Characteristics	Study 1 (N = 510), %	Study 2 (N = 92), %	Study 3 (N = 79), %
Gender of child, male	50.6	52.2	46.8
Age of child, mo			
1–6	29.8	30.4	5.1
7–12	28.8	27.2	29.1
13–24	41.4	43.4	65.8
Caregiver education			
Illiterate	0.0	13.0	0.0
Elementary school	2.4	51.1	26.6
Secondary or high school	28.2	20.7	30.4
University	69.4	15.2	43.0
Caregiver employment			
Employed	69.4	21.7	43.0
Unemployed	30.6	78.3	57.0

RESULTS

Study 1: Ages of Attainment of the GMCD Milestones

Of the 546 families invited to participate in the study, 18 were excluded because of iron deficiency anemia (n = 12), chronic illness (n = 2), or history of perinatal asphyxia (n = 4). Of the 528 families who met study inclusion criteria, 18 declined, resulting in a 97% response rate. The sociodemographic characteristics of the remaining sample of 510 children are shown in Table 2. The sample was 51% male, and 59% were $\leq$12 months of age. Most mothers had at least a secondary school education (97.6%) and worked (69.4%). Most were nuclear families (86.7%), and in 58.1%, the mother was the child's full-time caretaker.

Item-total scale correlations ranged from 0.29 to 0.91; 84% of the 89 milestones had item-total correlations $\geq$0.40. Internal consistency measured by the Cronbach's α was high,[50] ranging from .80 to .96 for each of the 6 domains and was .95 for the total GMCD. An age-dependent developmental pattern was seen in all of the milestones, as reflected by Pearson correlation coefficients for each domain score and age in months ranging from 0.88 to 0.96 (P < .001). No statistically significant differences were found between the mean ages of attainment for girls and boys on any of the milestones or domains. Therefore, 1 reference table was constructed for both genders. Table 3 shows an example of the developmental progression of the ages of attainment of 3 selected milestones. A similar age-dependent developmental pattern was seen in all of the milestones. The milestones were placed in the age ranges based on the 90% cutoff; the final GMCD had between 9 and 15

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TABLE 3 Examples of Age-Dependent Attainment of Selected Milestones

Age, mo	n	N (%)		
		Laughs Aloud	Makes Sounds Joining Vowels and Consonants (eg, "ga" or "da")	Repeats Syllables Like "da-da"
0–2	26	1 (5.3)	0 (0.0)	0 (0.0)
3	29	9 (31.0)	1 (3.4)	0 (0.0)
4	30	20 (66.7)	7 (23.3)	0 (0.0)
5	34	32 (94.1)[a]	13 (38.2)	0 (0.0)
6	27	27 (100.0)	17 (63.0)	4 (14.8)
7	42	42 (100.0)	41 (97.6)[a]	18 (42.9)
8	18	18 (100.0)	18 (100.0)	14 (77.8)
9	17	17 (100.0)	17 (100.0)	16 (94.1)[a]
10	37	37 (100.0)	37 (100.0)	37 (100.0)

[a] Data show the age after which >90% of sample attained the milestone.

milestones, respectively, for each of the 8 age ranges from 0 to 24 months.

Study 2: Ease of Administration and Interrater Reliability

The sociodemographic characteristics of the sample in study 2 are shown in Table 2. Most caregivers in this sample had <5 years of education (64%), and 78% were unemployed mothers. After the standard training, 96% of medical students stated that the GMCD was easy to administer and that within the brief encounter they achieved good communication with caregivers. The mean administration time by the students was 7 ± 2.3 minutes. Almost all of the caregivers (98%) stated that the questions of the GMCD were easy to understand and answer. For the total sample, interrater reliability between the student pairs (agreement: 93.4%; $\kappa = 0.84$; $P < .001$) and between the child development specialist and the students (student 1: agreement: 94.5%; $\kappa = 0.88$; $P < .001$; student 2: agreement: 92.3%; $\kappa = 0.83$; $P < .001$) were high.[52] Between student pairs, κ was 0.79 ($P < .001$) for caregivers with a primary school education or less and 0.93 ($P < .001$) for caregivers with at least a secondary school education.

Study 3: Concurrent Validity

The sociodemographic characteristics of the sample in study 3 are shown in Table 2. Most caregivers had a high school education or less (57%) and were unemployed (57%) mothers. The development of the former very low birth weight children was found to be "appropriate for age" in 68.4% with the GMCD and in 69.6% with the comprehensive evaluation. The average agreement on positive (developmental delay) and negative (no delay) cases was 21 (87.5%) of 24 and 51 (92.7%) of 55. The weighted sum of these 2 indices of average agreement produced the overall agreement of 72 (91.1%) of 79 and a κ of 0.79 ($P < .001$). The sensitivity and specificity rates were 21 of 24 (0.88; 95% confidence interval: 0.69–0.96) and 51 of 55 (0.93; 95% confidence interval: 0.83–0.97), respectively, which represent "good" and "excellent" levels of diagnostic accuracy.[53] Based on this clinic sample, we obtained a predicted positive accuracy value of 0.84 and a predicted negative accuracy value of 0.94.

DISCUSSION

The GMCD is a novel method with the ultimate goal of facilitating developmental monitoring and the early detection of developmental difficulties of children in LAMI countries. The theoretical conceptualization of the GMCD is anchored in family centered, relationship, and strengths-based developmental assessment theory,[21,24,39–41] and the techniques used are adapted from currently used strategies in screening and surveillance.[32,33,42] The GMCD advances the field conceptually by introducing a new and practical method of using an open-ended interviewing technique to obtain comprehensive information about the child's developmental functioning. Brevity of the training, administration, and scoring and the 1-sheet instrument offer a practical approach to developmental monitoring. The 3 studies in Turkey have provided promising results on the psychometric properties of the GMCD. Internal consistency was high, as measured by item-total score correlations and Cronbach's α for the domains and total score. The sample size of ~64 children in each of the 8 age ranges was adequate to demonstrate a stable, age-dependent attainment of the milestones. The 90th percentile cutoff point was used for placing milestones in age ranges; the percentile method has been used previously in other instruments, such as the Denver II.[47] Medical students with no previous background on child development were able to learn the GMCD after a brief training and administer it reliably. Sensitivity and specificity were in the range that is considered good to excellent for the diagnostic accuracy of developmental screening tests.[53]

In high-income countries, different instruments have been standardized and validated for developmental monitoring and the early detection of developmental difficulties.[7,22,23] In LAMI countries, research on child development is extremely limited.[2,5,6,13,14] Instruments such as the Ten Questions Questionnaire,[55–57] Access Portfolio,[58] and Disability Screening Schedule[59] have been developed but are designed to question caregivers about whether a child has a severe disability and do not provide a framework for monitoring the development of young children. The Denver test[47] has been used in many countries, but decades after large standardization and restandardization studies in many different LAMI countries, research on the use of the Denver test in promoting developmental monitoring and child development is lacking. The Denver test relies on "child testing" and "structured questions," both of which are not ideal in LAMI countries. The training does not stress the importance of developing partnerships with caregivers or of promoting child development and does not have a component that can be used for planning interventions. Furthermore, the Denver II test is less commonly used in the West than it was previously because of research demonstrating its inadequate screening accuracy.[60]

Each of the 3 studies has limitations in sampling and methodology. The study on the ages of attainment of GMCD milestones (study 1) is only generalizable to healthy children receiving well-child care in Ankara. In

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Turkey, 4 risk factors that are associated with developmental difficulties in young children are prevalent: malnutrition, iron deficiency anemia, low birth weight, and chronic illness.[61] In study 1, therefore, we used the "prescriptive sample" approach recommended by the WHO.[50,51] In the United States, most instruments on cognitive development have standards based on general populations where no attempts are made to exclude children with health conditions that pose risks to development. However, because children in developing countries have much higher rates of such health-related problems that increase the likelihood of developmental problems, the WHO recommends using "prescriptive samples" to construct standards. This approach was applied by the WHO in the construction of the newly launched WHO International Growth Standards and the WHO Motor Development Study.[50,51] These studies have shown that, when child health is homogeneous and optimal, child growth and motor development are similar across diverse countries. The "prescriptive sample" approach enables LAMI countries to have standards for child development that are independent of major health-related risk factors for child development, more comparable between countries, and similar to those of Western children. This approach is now being applied in developing countries as exemplified by the population-based standardization study for developmental milestones in Argentina.[62] As suggested by our study and that from Argentina, when healthy subjects are recruited, the sample may be skewed toward children whose caregivers have higher educational levels than national averages. Population-based studies are needed to examine the diagnostic accuracy of instruments, such as the GMCD, that have used healthy samples to construct standard references. Particular attention should be directed to whether this approach leads to high false-positive rates or whether it enables the identification of children who have delayed development but would be considered to be developing normally if population-based standard references were used.

The findings of the reliability study (study 2) were limited to medical students in a research setting. This study has provided evidence that medical students who have minimal clinical experience can be rapidly trained to administer and score the GMCD. Future studies must address whether the reliable administration of the GMCD can be sustained in real-life clinical practice. In this study, the sociodemographic characteristics of the sample were similar to national census data: 64% of the caregivers had <5 years of education, and 12% were illiterate. Those caregivers with low education could communicate their child's development in the GMCD process and provide information for the GMCD. κ was lower but still within the excellent range for caregivers with primary school education or less.[52] Future population-based studies in real-life settings are needed to determine the reliability and validity of the GMCD for caregivers with different levels of education.

The study on validity (study 3) did not use a population-based sample, and, therefore, the information on positive predictive accuracy and negative predictive accuracy only pertains to the clinical sample on which it is based. Future research is required to test whether similar results will be obtained for a population-based sample. The sample size was not adequate to determine whether validity was appropriate for all of the age ranges; the sample size for the 0- to 6-month range was particularly small. Until further evidence is available on the validity of the scoring criteria in large, population-based samples and different cultures, the GMCD should be used to guide clinicians in monitoring and supporting child development and should not be used as a cross-sectional screening test. Furthermore, in study 3, the validity of the GMCD was examined using a cutoff point for the Bayley II of −2 SD and a 90% cutoff point for the milestones. In future studies, so as to avoid missing children with mild delays, it will be important to determine which cutoff points for the milestones are accurate in comparison with a 1.5-SD cutoff point for the gold standard assessment.

The GMCD training program developed by the authors consists of written materials, slides, and demonstration videos and has been adopted by the Turkish Ministry of Health and UNICEF-Turkey to be used in a nationwide training program on child development for primary health care providers. The training involves 1 day for each of the 3 GMCD components. The training includes interpreting the result of the GMCD together with all of the other existing clinical information, giving feedback starting with the child's specific strengths and using the following components to develop a plan with the caregiver to support the child's development and to manage developmental difficulties if they are detected. In future research it will be important to: examine psychometric properties in population-based samples in diverse countries and to examine the efficacy and effectiveness of the GMCD training program in the early detection and management of developmental difficulties within health care systems.

This study also raises an important question related to international research on measures for monitoring child development in LAMI countries: if, as suggested by the WHO, healthy "prescriptive" samples are used to develop standard references for instruments such as the GMCD, are the ages of attainment of key developmental milestones of healthy children similar across countries? Comparisons of our data with other studies[62,63] suggest that, during the early ages, children from different populations may attain developmental milestones at similar ages. If milestones with similar ages of attainment across populations can be included in instruments for developmental monitoring, such as the GMCD, this may have important implications for eliminating the need to standardize and validate instruments in each country.

CONCLUSIONS

As an effective strategy to enhance child development, many developed countries have redefined health care and have incorporated efforts to monitor and support the development of young children. As childhood mortality continues to fall in LAMI countries, there is an emerging interest in introducing models to optimize

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child development and to reduce the burden of developmental difficulties beginning in early childhood. The GMCD developed specifically to address some of the challenges in LAMI countries offers a practical new method for developmental monitoring and the early detection of developmental difficulties within health systems in such countries.

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A Guide for Monitoring Child Development in Low- and Middle-Income Countries

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Original Article

Addressing Early Childhood Development in Primary Health Care: Experience from a Middle-Income Country

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ABSTRACT: ***Objective:*** **This study aimed to evaluate the efficacy of a national training program in Turkey in improving primary health providers' knowledge and perceived competence about the promotion of early childhood development and prevention, early identification and management of developmental problems; and barriers to implementation and sustainability of skills gained.** ***Methods:*** **A pre-post intervention design was used. Tools measuring perceived competence and knowledge about childhood development were administered to primary health providers before and after training. Immediate skills were observed, and implementation and sustainability of skills were determined using individual surveys and focus group discussions 1 year after training.** ***Results:*** **The training was provided in 5 provinces. Of the 148 primary health providers trained, 90% had >5 years experience in providing primary care. Median knowledge test scores were 13 pretraining and increased to 22 posttraining ($p < 0.001$). Median perceived competence scores increased from 159 to 222 ($p < 0.001$). A year after the training, the program and materials were reported to be valued and remembered but used limitedly. Patient load, insufficient time allocated to primary care, lack of reimbursement, and ineffective referrals to pediatricians who had knowledge gaps regarding child development were identified as important barriers to implementation and sustainability of skills gained.** ***Conclusions:*** **In Turkey and potentially other countries with similar health systems, short-term inservice training on child development can improve primary health providers' knowledge, perceived competence and skills related to child development. To decrease the disparities between high- and low- and middle-income countries in addressing child development, significant barriers within health systems need to be identified and addressed.**

*(J Dev Behav Pediatr 30:*319–326, 2009) **Index terms:** early childhood development, developing country, primary care, developmental disability, early intervention, in-service training.

Developmental delays, disorders, or disabilities in the areas of cognitive, language, social-emotional, behavioral, or motor development constitute a great proportion of childhood morbidity and a public health problem in all nations.[1,2] The health care system is often the only existing system that has the potential to reach all young children in low-, middle- and high-income countries alike. For decades, high-income countries have redefined health care systems to include the promotion of child development and the prevention, early identification, and management of developmental difficulties.[3–9] Until recently, in low- and middle-income (LAMI) countries, health care systems have focused on improving childhood survival and physical health.[10] However, childhood mortality is falling in LAMI countries, and there is an increased international emphasis on promoting child development and addressing developmental difficulties within health systems.[2]

The World Health Organization and United Nations Children's Fund have held a longstanding recognition that child health and development are united and continue to develop innovative materials to enable addressing child development during health care encounters.[11,12] Services for children with developmental difficulties are increasingly becoming available in LAMI countries through the World Health Organization Community Based Rehabilitation Programs.[13,14] To provide a blueprint for progress in this area in LAMI countries, the Institute of Medicine released a report entitled "*Neurological, Psychiatric, and Developmental Disorders: Meeting the Challenge in the Developing World.*"[15] This report recommends that "in the context of the successes of current primary health care child survival initiatives, it is essential in low-income countries that increased emphasis be placed on prevention and early identification

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of developmental disabilities within the primary and maternal and child health care systems." Because of the paucity of research on feasible models in LAMI countries, limited information exists on what needs to be done to achieve this recommendation.[2,15–17]

Research from high-income countries, such as the United States,[18,19] Europe,[20] Israel,[21] and Australia,[22] suggests that the primary health providers require specific training related to addressing child development concepts during health encounters. In such countries, most child development training is conducted during preservice continuity clinic and developmental-behavioral pediatric experiences[23] or long-term in-service training programs.[20] Because of the lack of such extended training opportunities in LAMI countries, different practical and feasible models need to be investigated.

The limited research on health provider knowledge and competence related to child development in LAMI countries has shown that health clinicians require specific training about counseling caregivers on child development[24] and detecting early and managing developmental difficulties.[25–28] The minimum length and content of the training that is required to improve knowledge and competence related to these issues is unknown. For example, despite the numerous programs United Nations Children's Fund has funded to address child development in LAMI countries, systematic research on evaluation of programs within health systems has not been reported.[29] A few intervention studies conducted in Sri Lanka and Uganda,[30] India,[31] Jamaica,[32] and Turkey,[33] have examined the feasibility of training clinicians in child development and have found promising short-term outcomes. However, these studies provide limited information as: (a) each focuses on one aspect of child development training such as identifying children with developmental disabilities[30,31] or counseling caregivers in enhancing child development[32,33] and (b) they examine the efficacy of training under controlled research conditions and do not provide information on what happens in "real life" health systems. Primary health providers in LAMI countries are in a key position to promote child development, to prevent developmental difficulties, and to detect and manage developmental problems. However, very little is known about primary health providers' level of knowledge and competence related to child development, whether and how this can be improved with available resources, and what is needed to help primary health providers address child development issues during health care encounters on an ongoing basis.

We had the opportunity to examine a training program on early childhood development for primary health care providers in Turkey. The Turkish Ministry of Health's Maternal-Child Health Department and United Nations children's Fund-Turkey commissioned the authors (IOE, CGG, HO, and UB) to develop a training program titled "Early Childhood Development Training Program." This program provided in-service training aimed at increasing primary health care clinicians' knowledge and perceived competence about early childhood development. During 2004 to 2006, the Early Childhood Development Training Program was piloted and evaluated in 5 cities. The purpose of this study was to provide information about: (1) whether the brief training program improved primary care clinicians' knowledge and perceived competence about the promotion of child development and the prevention, early detection, and management of developmental difficulties; and (2) to identify strengths and barriers in incorporating the information and skills gained through the training into routine health care encounters.

METHODS

A pre-post intervention design was used. The participants were general practitioners (GPs) and nurse-midwives, collectively referred to as primary health providers (PHPs), chosen by local Ministry of Health administrators to participate in the Early Childhood Development Training Program, because they had successfully carried out other programs, such as immunization campaigns in their communities. The knowledge and perceived competence of the clinicians were assessed immediately before and after the training at each site. A year after the training, the investigators visited 3 of the 5 cities (Istanbul, Izmir and Mersin) and obtained information on the implementation of the program. Such meetings were not possible in the other 2 cities due to funding restrictions.

Setting

Turkey is a middle-income country with a population of approximately 80 million. Primary health care is subsidized by the government and free of charge for pregnant women and children up to age 18 years, and approximately 75% of the population have health insurance for all levels of health care.[34] Historically, provider salaries were fixed. In the past 5 years, a "performance system" has been instituted. Providers are paid additional salaries per served patient and for performing certain tasks and procedures. Developmental monitoring and promotion have not been included in the "performance list." Both acute care for minor illnesses and well-child care services are provided in community health care centers, staffed by GPs, nurses and nurse-midwives, and located at neighborhood levels in cities and villages. Population per GP and nurse-midwife comprises 4500 and 5000, respectively. Home visiting is a part of the health system in some areas, and nurse-midwives provide home visits to pregnant women and young children. Children with major illnesses, including developmental difficulties, are referred by GPs to pediatricians in hospitals. Centers for diagnostic developmental evaluations are few. Developmental-behavioral pediatrics exists only in the capital, at Ankara University, and has not been approved yet as a pediatric subspecialty. There are approximately 100 child psychiatrists in the country. Although diagnostic services are few, children with developmental difficulties if referred by GPs and

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diagnosed by pediatricians or child psychiatrists are eligible for government subsidized early intervention and rehabilitation services. These services have not been used optimally because of late recognition of developmental difficulties.[35]

This study took place in 5 cities: Istanbul, Izmir, Adana, Samsun, and Mersin, with populations ranging from 1 to 10 million. These sites were chosen to parallel World Health Organization recommendations for early implementation of new child health strategies in low- and middle-income (LAMI) countries: good physical access to central-level staff; committed staff at the district level; availability of a training site; availability of treatment for conditions identified; existence of referral care; and availability of funds.[36]

Development of the Training Program

The Early Childhood Development Training Program was developed over a 1-year period by the first author after a comprehensive study of existing programs in different countries,[3–8,30,31,37,38] visits to the European Early Promotion Project[5] and Sure Start[4] in England, consultations with experts in Turkey and around the world, and focus groups with pediatricians, PHPs, medical and nurse-midwifery students, parents of young children and children with developmental difficulties. The training program was developed for a mixed group of GP physicians and nurse-midwives as they constitute a team in child health, and their baseline level of knowledge and experience in concepts related to child development was believed to be comparable. The training was based on the ecological conceptualization of child development[39] and relationship-based, family-centered child health care.[40] The content of the training included 5 main topics: (1) theoretical information on brain development; (2) biopsychosocial risks to optimal development and the relevance of interventions such as family planning, prenatal and perinatal care, breast feeding, immunizations, iron supplementation, and early detection of maternal depression; (3) skills for counseling caregivers on child development; (4) developmental monitoring for early identification; and (5) management of developmental difficulties during routine health care encounters. Training for skills for counseling caregivers related to child development was based on the World Health Organization/United Nations Children's Fund Care for Child Development Intervention[41] model, which was expanded to include specific concepts related to mental health and emotional development as well as cognitive development.[42] Training for developmental monitoring was done using the Guide for Monitoring Child Development,[42] which has been developed as a standardized instrument specifically to enable clinicians in low- and middle-income countries to monitor child development and identify developmental difficulties early.

The Turkish Ministry of Health and United Nations children's Fund-Turkey determined the duration of training to be 3 days due to limitations in sustainable funding. The training took place in a local training center at each site. Based on adult learning theory,[43] the program built on existing skills of the clinicians enabled interactive, experiential, and problem-based learning and supervision while clinicians practiced their skills at the health care centers. Educational materials included a textbook that included community resources, trainer's guide, and compact disk with presentations, video clips, and case scenarios. To ensure the optimal and uniform training, 6 academicians with extensive training experience conducted training at all 5 sites.

Measures

The PHPs' knowledge on child development was determined using a tool that included 23 multiple-choice and 7 true or false questions. This tool was based on the content of the training program and had questions on promoting child development and the prevention, early identification, and management of developmental difficulties. The total score was derived by adding all correct answers (range 0–30). The perceived competence of PHPs' on child development was determined using a questionnaire that was based on the content of the training program. This questionnaire had 25-items, asking about perceived competence in 4 main topics: theory of child development, assessment and early identification, management of common developmental problems, and collaboration with other community services. Each item was rated on a 10-point Likert scale (1 = not competent and 10 = very competent), providing a total score with a range of 25 to 250. Both measures were finalized after pilot testing on 156 medical students, 22 pediatric residents, and 32 primary care clinicians. The second day of the training was onsite practicum. During this day, each PHP was observed and rated by the trainers in applying skills related to the Guide for Monitoring Child Development and Care for Child Development (CCD). An observational trainer guide developed specifically for this purpose was used.[33,42] Practicum continued until all clinicians were rated as totally competent in administering the Guide for Monitoring Child Development and CCD. Trainers recorded the number of practice cases needed to acquire the skills.

The Program Evaluation Questionnaire was a written questionnaire to determine clinicians' individual views about the implementation of the program and was administered during follow-up meetings. The Program Evaluation Questionnaire included structured questions based on the retrospective pretest method.[44] This method asks participants to recall what it was like before an intervention and to compare this with the situation after the intervention. Clinicians were asked whether their practices relating to child development increased, remained the same, or decreased when compared with that before training. Clinicians were asked also to estimate the proportion of children seen in the past month for whom they had applied the skills gained through their

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training. Open-ended questions relating to strengths and barriers of the program were included. After the administration of the Program Evaluation Questionnaire, focus groups were held with PHPs. The focus group discussions were transcribed and analyzed to identify the themes that emerged.

Data Analysis

Pretraining and posttraining total scores on the knowledge test and perceived competence questionnaire were compared using the Wilcoxon Test. To demonstrate meaningful change, the perceived competence questionnaire scores were dichotomized. To address reliability of cutoff points, customary cutoff points used in competence tests throughout the Turkish primary to university education system were used: scores of 8, 9, and 10 were categorized as "competent" and scores <8 as "not competent." Differences between the proportion of clinicians scoring themselves as competent on each item before and after training were analyzed for significance using the McNemar Test. Differences between GPs' and nurse-midwives' total scores on knowledge test and perceived competence questionnaire before training and after training were compared using the Mann-Whitney U Test. For all analyses, the Statistical Package for Social Sciences Version-10.0 was used.[45]

Identifying information was not included on any of the measures, and oral informed consent was obtained. The study was approved by the Ethics Committee of Ankara University Medical School and by the Ministry of Health.

RESULTS

A total of 148 primary health providers (PHPs) were invited to the training program (61 GPs and 87 nurse-midwives), and all agreed to participate in the study. Most PHPs were women (89%), older than 30 years of age (75%), and had more than 5 years experience in providing primary health care (90%). Most clinicians had raised at least 1 child of their own (84%), but only 5% reported receiving any formal training in the development of young children.

The median knowledge test score increased from 13 (interquartile range: 10-16) before training to 22 (interquartile range: 20-24) after training ($p < 0.001$). The proportion of clinicians who perceived themselves as competent increased significantly at least by 50% after the training on all of the perceived competence questionnaire items ($p < 0.001$). To demonstrate increases in scores in all areas, 11 of the 25 items are shown in Table 1. The median perceived competence questionnaire score increased from 159 (interquartile range: 128-185) before training to 222 (interquartile range: 208-236) after training ($p < 0.001$). The differences between the scores for the GPs and nurse-midwives on the knowledge and perceived competence measures were not statistically significant before or after training. All clinicians were rated by the trainers as totally competent on the Guide for Monitoring Child Development and CCD after a maximum of 4 practice cases. Therefore, it was possible to complete the training in the given 3 days.

Table 1. Perceived Competence in Child Development Questionnaire Example Items (N = 148)

Self Assessment by Primary Health Care Providers	Score ≥8 Before Training (%)	Score ≥8 After Training* (%)
I am confident in my knowledge of child development	25.7	93.3
I can conduct a comprehensive developmental evaluation of a 6-month-old infant	42.9	90.5
I can conduct a comprehensive developmental evaluation of a 3-year-old child	33.3	89.5
I can manage feeding problems during infancy and early childhood	35.2	84.8
I can provide counseling to families on how to promote their child's development in their homes	26.7	85.7
I can refer children who have developmental problems appropriately	26.7	84.8
I can provide developmental and health surveillance to children with developmental problems (such as premature infants, children with Down Syndrome, and cerebral palsy)	13.3	66.7
I can detect children in need of physical therapy and refer them for appropriate services	41.0	89.5
I can detect children in need of early intervention and refer them for appropriate services	40.0	89.5
I know about the rights of children with special developmental needs in my country and can provide counseling to families	15.2	84.8
I know how to reach resources serving children with developmental problems in my community	19.0	74.3

*$p < 0$.

One year after the training, 61 clinicians (69% of those trained in the 3 cities) attended the follow-up meetings. Most of the clinicians who did not attend (90%) had relocated to other cities. On the Program Evaluation Questionnaire, 75% of the clinicians reported improvements in their skills related to counseling caregivers on how to promote their child's development, 69% on their skills at following children at risk of developmental delay, and 57% in referring children for early intervention and/or rehabilitation services. Skills that fewer clinicians reported to be improved were the ability to collaborate with community resources (38%) and screening for biopsychosocial risks to development (25%) when developmental delays did not exist. Approximately, half of the

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clinicians (54%) reported using developmental monitoring techniques for some of their patients, but only 12% of clinicians (all being nurse-midwives who were conducting home visits) estimated that they had applied these on all of the children they had seen in the past month.

The open-ended questions of the Program Evaluation Questionnaire and the focus groups provided information on 3 domains (strengths, weaknesses, and barriers of the training program) and also provided suggestions on improving the program. The PHPs identified the strong points of the program as the content and materials of the training program, the ease of applicability of the skills gained, and their improved ability to engage caregivers. The "Guide for Monitoring Child Development" in particular was found to be useful in helping the PHPs in portraying the child's developmental status, identifying and verifying developmental delays, and making confident referrals. The expanded World Health Organization/United Nations Children's Fund Care for Child Development Intervention messages were also valued by the PHPs.

Key programmatic issues were viewed as barriers to effective implementation and sustainability. The training had been planned solely as a 3-day "course" to improve perceived competence and knowledge rather than a more comprehensive program that changed practices, incorporating child development into health care delivery. The Ministry of Health and United Nations Children's Fund had expected that implementation would occur seamlessly after the training was provided. However, lack of a system that could provide ongoing feedback to PHPs after implementation and the absence of planned links to tertiary health care and early intervention systems were viewed by the clinicians as problems that should have been addressed by the program itself.

Three major barriers within the overall health care system that were identified by the PHPs were as follows: (1) insufficient time allocated to primary health care encounters for children due to excessive patient loads. Specifically, most (76%) reported that because of high patient loads, they were only able to allocate 10 minutes or less for each health care encounter. Most health care encounters were for acute illness rather than well-child care. (2) Ineffective referrals to tertiary care centers because the pediatricians to whom they referred had inadequate knowledge about the development of young children and could not diagnose and manage developmental difficulties. (3) Exclusion of child development issues from the new fee for service system and inability to receive reimbursement for the time spent on developmental issues.

To overcome some of the barriers, clinicians recommended 3 next steps: training of pediatricians within secondary and tertiary systems in child development and developmental difficulties; improving caregiver awareness of child development through visual and reading materials such as posters; and including child development issues in the health care provider's reimbursement system.

DISCUSSION

In this study, a brief, one-time training program was found to markedly improve primary health care clinicians' objectively measured knowledge and perceived competence about promoting child development and the prevention, early identification, and management of developmental difficulties in young children. The clinicians regarded the training program and materials as valuable, but reported both programmatic and health system-related issues as major barriers to program implementation and sustainability.

Limited research exists on the role of health care systems in low- and middle-income (LAMI) countries in addressing issues related to child development.[15,16,46] This study adds information to studies from India,[25,26] Singapore,[27] and Brazil[28] about the deficits in primary health providers' (PHPs) knowledge on child development. The similarity between physicians' and nurse midwives' perceived competence and knowledge about child development both at baseline and after training implies that in Turkey and possibly other LAMI countries, all primary health care providers may require and can benefit from similar training. Three previous studies from LAMI countries have shown promising results in training clinicians to address specific areas, including identification of developmental disabilities,[30,31] promotion of parenting skills and psychosocial stimulation,[32] and counseling caregivers, in enhancing child development during visits for their child's acute minor illness.[33] This study introduces and evaluates a new training program that covers a broader range of issues than those described in the earlier studies. Despite the brevity of the program, there were substantial increases in both the PHPs' perceived competence and objectively measured knowledge. The practicality and comprehensiveness of the training materials were valued as strong points of the program.

Programmatic issues impacted on implementation and sustainability of the clinicians' skills. The North Carolina Assuring Better Child Health and Development (ABCD) project has found that successful implementation is achieved by significant system changes, including identifying a physician champion to lead the program, providing supervision to PHPs, making a roadmap for workflow and referrals, identifying and collaborating with key referral sources, and enabling data collection for program feedback.[47] These issues had not been addressed in the Early Childhood Development Training Program. The findings of this study suggest that organizations at international and national levels should not suffice in introducing training courses but should build capacity to address all aspects of program implementation and sustainability at local levels. Despite the fact that the ABCD has been developed in the United States,

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we believe that it can also serve as an excellent resource and roadmap for LAMI countries.

Continuing medical education has been found to be effective in improving physicians' application of knowledge. Use of multimedia, multiple instructional techniques, and live, face-to-face educational activities have been found to optimize educational outcomes.[48] Studies from a range of disciplines, however, have demonstrated that despite the increase in provider knowledge and skills, training without system change may not positively effect clinicians' practice.[47,49,50] For LAMI countries where health provider training is crucial to improve early childhood development, this study provides preliminary information on some of the strategies and system changes that may be needed to improve provider practices. Barriers for the clinicians, in applying their newly developed skills to preventing, identifying, and addressing the developmental difficulties of children for whom they provide care was largely related to systems issues. The main barriers were patient load, brevity of health care encounters, exclusion of practices related to child development from the new fee for service system, and ineffective referrals to pediatricians from the primary care. An initial step in addressing child development within health systems in LAMI countries should be identifying barriers such as time devoted to health care delivery and fee for service systems. The PHP surveys in this study have indicated that it may be more realistic for the PHPs to address child development, when home visitation is conducted and if there is appropriate allocation of time for well-child care exists. Where sufficient time is not allocated to any component of preventive care, it may be unrealistic to expect that the PHPs can address child development. Our findings also underscore those health care systems in LAMI countries, which do have fee for service systems to include child development issues within these systems.

Pediatricians' needs for specific training in child development have been well documented in high-income countries.[51–53] Although pediatricians may not be the frontline PHPs in LAMI countries, they may be the gatekeepers for children with special needs to receive diagnoses, health care, and other services. This study has shown that unless PHPs and pediatricians have in the least, similar knowledge about early childhood development and are linked to work in collaboration, the efforts of the PHPs in the early identification of developmental difficulties may not be sufficient. The second component of the recommendation by the Institute of Medicine, which recommends that primary ". . . systems must in turn be linked to and supported by secondary and tertiary medical services"[15] is also emphasized by this study.

The major strengths of this study are the broad range of information it has generated by combining quantitative and qualitative methods and the long-term evaluation of the intervention within the routine health care system. This study has 3 important limitations. First, as objective evaluation of the competence and skills of clinicians could not be conducted, the results are subject to the biases of self-report questionnaires.[54] Second, the clinicians were not randomly chosen from a representative sample of primary health care clinicians in Turkey. The bias in selecting clinicians who were successful in other programs may mean that they were more competent and motivated than the overall population of clinicians. Third, a controlled design was not feasible.

This study demonstrates the paucity of clinicians' knowledge and perceived competence related to child development, the feasibility of increasing this knowledge and competence with a brief training program, and the difficulty of implementing the integration of child development within an already burdened health care system in a middle-income country, Turkey. In Turkey and potentially other countries with similar health care systems, to address child development, clinicians at all levels of health care require in the minimum, short-term in-service training. Furthermore, to decrease the disparities between high and LAMI countries in addressing child development within health care, feasible and sustainable comprehensive models need to be urgently developed, implemented, and evaluated.

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ARTICLE

Promoting Child Development at Sick-Child Visits: A Controlled Trial

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The authors have indicated they have no financial relationships relevant to this article to disclose.

ABSTRACT

OBJECTIVE. In developing countries, the health care system often is the only existing infrastructure that can reach young children, and health care encounters may be the only opportunity for professionals to have a positive influence on child development. To address the discrepancy between Western and developing countries related to the information that is available for caregivers on how to support their child's development, the World Health Organization Department of Child and Adolescent Health and Development and United Nations International Children's Education Fund have developed the Care for Development Intervention. The Care for Development Intervention aims during acute health visits to enhance caregivers' play and communication with their children. For facilitation of its delivery worldwide, the Care for Development Intervention was developed as an additional module of the Integrated Management of Childhood Illness training course. The purpose of this study was to determine the efficacy and the safety of the Care for Development Intervention when implemented during a young child's visit for acute minor illness.

METHODS. The study design is a sequentially conducted controlled trial, with the comparison arm completed first, Care for Development Intervention training provided for the clinicians next, followed by the intervention arm. At the Pediatric Department of Ankara University School of Medicine, 2 pediatricians who were blinded to the study aims and hypotheses before Care for Development Intervention training provided standard health care to the comparison group; they then received Care for Development Intervention training and provided standard health care plus the Care for Development Intervention to the intervention group. Compliance with treatment and the outcome of illness were determined by a follow-up examination in the clinic 1 week later. One month after the clinic visits, an adapted Home Observation for Measurement of the Environment was administered in the homes by researchers who were blinded to study aims and hypotheses.

RESULTS. Children who were aged ≤24 months and attended the clinic with minor or no illnesses were recruited for the study: 113 in the comparison group and 120

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Key Words
child development, developing country

Abbreviations
WHO—World Health Organization
UNICEF—United Nations International Children's Education Fund
CDI—Care for Development Intervention
IMCI—Integrated Management of Childhood Illness
HOME—Home Observation for Measurement of the Environment Inventory
RR—relative risk
CI—confidence interval

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in the intervention group. At the 1-month home visit, significantly more families had optimal Home Observation for Measurement of the Environment scores (17.5% vs 6.2%), more homemade toys were observed (42.5% vs 10.6%), and more caregivers reported reading to their children (20.0% vs 3.5%) in the intervention than in the comparison group. Three independent predictors of optimal Home Observation for Measurement of the Environment score emerged from the logistic regression analysis: being in the intervention group, child ages >6 months, and maternal education greater than secondary school. Compliance with medical treatment and illness outcomes were not significantly different between the 2 groups.

CONCLUSIONS. The Care for Development Intervention is an effective method of supporting caregivers' efforts to provide a more stimulating environment for their children and can be used by health care professionals during visits for acute minor illness.

THE UNITED NATIONS CONVENTION on the Rights of the Child calls for countries to help children develop to their utmost potential. International organizations, such as the World Health Organization (WHO) and the United Nations International Children's Education Fund (UNICEF), recognize that health systems no longer can aim just for child survival but also must address child development.[1–3] As information on brain development in early childhood and its effects on health and development across the life span have increased,[4,5] developed countries have been redefining health care for children to address a broad range of psychosocial and developmental issues.[6–11] In many developing countries, infancy and young childhood are considered passive periods during which the child is nursed and fed without much communication or play, and this lack of stimulation is a key element in developmental delay.[2,12] The health care system is the only existing infrastructure that can reach young children, and health care encounters may be the only opportunity for professionals in developing countries to have a positive influence on the development of the young child.[12,13]

Socioeconomic difficulties and the paucity of simple models of interventions that can reach large populations have been major barriers to promoting child development. Furthermore, in developing countries, children have few encounters with health care providers, and typically these are not for well-child visits but for acute illnesses. To address the discrepancy between Western and developing countries related to the information that is available for caregivers on how to support their child's development, the WHO Department of Child and Adolescent Health and Development and UNICEF have developed the Care for Development Intervention (CDI).[14] The CDI aims to provide a cost-effective approach to enhancing the development of young children across public health care settings with resource limitations and is designed to be used when any child who is ≤2 years of age is seen for a health care visit. After the reason for the visit is addressed, the health care provider conducts a standardized interview to assess how the caregiver plays and communicates with the child. The intervention includes strategies for listening and observing for positive interactions, using specific praise and positive reinforcement, and providing the caregiver with ideas on play and homemade toys for age-appropriate stimulation. The CDI is well informed from current theories of child development and places caregiver-child interactions and the stimulation of the young child at the core of enhancing child development.[15]

Child development is a complex construct, and the early intervention literature suggests that sustained and comprehensive approaches have an impact.[16] The justification for brief interventions such as the CDI have evolved from the substantial information on the importance of incorporating a developmental approach into health care delivery for young children.[2–10,17–20] It has been shown that caregivers identify a strong desire and need to talk about child development with their health care provider,[21] and caregivers who receive during health care encounters interventions about playing and interacting with their children can benefit.[22] More recently, a focused intervention, Reach Out and Read, has been shown to be beneficial.[23,24]

For facilitation of its delivery, the CDI was developed as an additional module of the Integrated Management of Childhood Illness (IMCI)[25] training course, which already has been delivered in >100 countries. Pilot studies in Brazil (I. Santos, MD, PhD, H. Goncalves, PhD, R. Halpern, PhD, C. Victora, MD, PhD, *Pilot Test of the Child Development of the IMCI "Counsel the Mother" Module: Study Results and Recommendations*, unpublished report, 1999) and South Africa (M. Chopra, *Assessment of Participants on the Care for Development IMCI Training Course*, unpublished report, 2001) suggest that CDI training improves the counseling skills of health care providers. Questions that remain unanswered are whether caregivers remember the CDI recommendations and apply them in the home and whether the CDI is "safe" to use during visits for an acute minor illness. Therefore, the purpose of this study was to determine the efficacy and the safety of the CDI when implemented during a young child's visit for acute minor illness. We hypothesized that (1) caregivers who received the intervention would have more materials for stimulation and enhanced communication in their homes than a comparison group of caregivers who received standard care and (2) the addition of the CDI to sick-child visits would not decrease a caregiver's compliance with treatment recommendations and there would not be a negative impact on the outcome of the illness.

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METHODS

Study Design

The study design is a sequentially conducted controlled trial, with the comparison arm completed first, CDI training provided for the clinicians next, followed by the intervention arm. A randomized, controlled trial was not applied because it was considered important that both arms of the study be conducted by the same clinicians and that previous training in the CDI should not influence the standard care provided in the comparison arm of the study. One pediatrician (G.A.) was responsible for recruitment of participants. Two pediatricians (D.G.D. and B.E.B.) who had equal training and experience and were blinded to study aims and hypotheses before training for the CDI were instructed to provide routine care to patients in the comparison group. Subsequently, after CDI training, they were asked to apply the CDI to all of the patients in the intervention group. Six researchers who were experienced in child development and blinded to the aims and hypotheses of the study collected observational and interview information. Participants were informed that this was a study on child health and development and that there would be 2 groups receiving similar health care and 1 group given additional information. All participants provided written informed consent before enrollment. The study was approved by Ankara University Medical School Ethics Committee and the WHO Ethics Review Committee.

Setting and Participants

The study was conducted between March and June 2004 at the pediatric department outpatient clinic at Ankara University School of Medicine. This clinic provides services for children who come from low to middle socioeconomic backgrounds in Ankara, the capital city with a population of 4.5 million. Children were recruited when they were 24 months of age or younger and came to the clinic with a minor illness or well-child care and mothers were present during the clinic visit and were the primary caregivers in the home. Children who were clinically judged to be moderate to severely ill and those who lived outside Ankara were excluded.

Measures and Procedures

The measures (Table 1) were selected and developed after a comprehensive review of previously used and validated instruments. Researchers obtained 90% interobserver agreement on the instruments before the trial. One pediatrician (G.A.) screened all families who came to the clinic for eligibility criteria, obtained written consent, and used the Acute Illness Observation Scale[26] to ensure eligibility. Children then were assigned in alternating order to 1 of 2 pediatricians (D.G.D. and B.E.B.), who provided routine pediatric care. The visit was observed by a researcher who used the Physician Counseling Skills Scale[27] (I. Santos, MD, PhD, H. Goncalves,

TABLE 1 Measures

Scale	Content	Target	Reliability	Validity
Acute Illness Observation Scale[19]	Severity of illness: quality of cry, reaction to parent stimulation, state variation, skin color, hydration, and response to social overtures assessed on a 5-point scale; range of score: 6-30	Children aged 0-24 mo	Interrater reliability: 0.82–0.95	Construct validity; predictive validity
Physicians' Counseling Skills Scale[17,18,20]	Items used to evaluate physician's competence in counseling; range: 0-25 (25 items scored "yes" or "no")	Physicians	Reliability not examined in previous studies; interrater reliability >90% on all items available in this study	Construct validity
Satisfaction With Physician Scale	Adapted from Satisfaction Scale[21] that evaluates parent satisfaction with physician encounters during pediatric visits; range: 0-75 (15 observational items scored on a 5-point Likert scale)	Caregivers	Internal consistency, α = .87 in reference scale	Construct validity
HOME Infant Toddler Scale[22,23]	Observations and interview with caregiver in the home. Minor adaptation involved scoring of homemade toys within appropriate items of the original HOME (eg, homemade rattle scored as "eye–hand coordination toy"); range: 0-45 (45 items scored "yes" or "no")	Children aged 0-36 mo	Internal consistency Kuder-Richardson 20 correlations = .84–.93; test-retest reliability = .57–.76	Construct validity; predictive validity

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PhD, R. Halpern, PhD, C. Victora, MD, PhD, *Pilot Test of the Child Development of the IMCI "Counsel the Mother" Module: Study Results and Recommendations*, unpublished report, 1999) to assess the physician's competence in counseling caregivers on the child's health and development. At the end of each visit, the physician completed a structured form that included the child's diagnosis and the treatment recommendations. When the physician left the room, caregivers completed the Satisfaction with Physician Scale.[28] Participants returned for a follow-up visit 1 week later, and at that visit, the same pediatrician who initially had seen the child examined the child for remaining symptoms of the illness and recorded on a structured form the outcome of the child's illness, any additional visits to other clinics, admissions to a hospital, and use of medication and other treatment modalities. Outcome of illness and compliance with treatment were determined by a separate review and coding of these records by 2 physicians who were blinded to group status. "Total compliance" was scored when the caregivers stated using all of the medications that were recommended by the pediatrician in the correct dosage and frequency. One month later, a second researcher, who had not met the family before and who was blind to the hypothesis and the aims of the study, conducted a home visit and administered the adapted Home Observation for Measurement of the Environment Inventory (HOME).[29,30]

When all of the clinic visits for the comparison group were completed, the 2 pediatricians participated in training and piloting of the CDI, after which the intervention group was enrolled. All measures and procedures were identical for the intervention group except for the addition of the CDI to each visit. After routine procedures, the pediatrician conducted the standard CDI interview[14] to assess how the caregiver played and communicated with the child in the home. The physicians listened for and observed positive caregiver-child interactions, used specific praise and positive reinforcement throughout the visit, and showed the caregiver examples of play and homemade toys for increased caregiver-child communication and age-appropriate stimulation. One extra recommendation that was based on the Reach Out and Read program, which was developed and promoted in the United States,[23,24] reading picture books to young children, also was included in the intervention. At the 1-week follow-up visit for the intervention group, pediatricians reinforced the CDI by praising the caregiver on added stimulation materials and communication to the child's environment; when the caregiver had not applied the recommendations, the reasons were sought and the importance of enhancing the child's environment was reiterated.

The main hypothesis of the study, that the intervention group would have more play and communication in the home than the control group, was assessed using the HOME. Although the HOME has not been standardized for children in Turkey or other developing countries, because of its ability to measure universally recognized nurturing and stimulating qualities in a child's environment, its excellent psychometric properties, and ability to predict later development, the HOME has been used in many developing countries.[31–34] For this study, 5 experts in child development reviewed the HOME items and concluded that all items were culturally relevant and that 26 items could measure all of the goals of the CDI. The remaining 19 items were included to allow for comparisons of total scores with previous studies. The adaptation involved expanding items on toys to include homemade play materials in their appropriate categories. For example, if the caregiver provided clothespins for the child to place in a plastic bottle, then this play material was scored on the HOME scale as an eye-hand coordination toy.

Statistical Analysis

The main outcome was amount of stimulation provided to the child in the home (as observed by the adapted HOME scale) 1 month after the clinic visit. Sample size estimates were based on the potential to increase the proportion of participants with HOME scores ≥38 (a score that is predictive of optimal developmental outcome[23]) from 40% in the comparison group to 60% in the intervention group, with $\alpha = .05$ (2-tailed test) and power set at $1 - \beta = .80$. Allowing for 20% attrition, the minimum required enrollment was 128 per group. Statistical significance of differences between groups was examined using the χ^2 test and relative risks (RR) for categorical data and Mann Whitney U test for continuous data that are not normally distributed. In a logistic regression model, we examined the independent effects on optimal (≥38) HOME scores of child and caregiver characteristics that have been identified to affect home environments. These variables included group status, gender of child, age of child (<6 vs ≥6 months), having siblings, maternal and paternal education of secondary school or less (at most 8 years) versus high school or more education, nuclear (parents and children) versus traditional (extended family) family, housing situation (shanty houses versus apartment housing), insurance status (poverty insurance or none versus employment insurance), and maternal report of depressed mood. For all analyses, SPSS 11.5 was used.[35]

RESULTS

Of the 263 families approached, only 4 declined to participate and a total of 259 children were enrolled in the study: 129 and 130 in the comparison and intervention groups, respectively. The reasons and final diagnoses given for the visits included acute upper respiratory tract infection (36.9%), well-child care (18.0%), newborn problems (12.4%), dermatitis (8.6%), and other minor

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problems. As none of the families identified a primary health care provider, for all children in the study, this pediatric care included management of presenting illness as well as provision of preventive health care, such as immunizations and counseling for nutrition and safety. The mean duration of the initial visits were 25.6 minutes (SD: 6.1) in the comparison group and 36.9 minutes (SD: 10.5) in the intervention group ($P < .01$). The 1-week clinic visit and the 1-month home visit were complete for 233 children, 113 (87.6%) and 120 (92.3%) in the comparison and intervention groups, respectively. Families' visits outside Ankara and family illness that prevented appointments were the major reasons for loss to follow-up. There were no significant differences in severity of illness (as measured by the Acute Illness Observation Scale) or any of the baseline sociodemographic characteristics between those who completed the study and the 26 who were lost to follow-up. The results pertain to the 233 families with complete follow-up. As seen in Table 2, there were no significant differences between the intervention and comparison groups on any of the sociodemographic variables. Most children were 12 months or younger, were the only children in the homes, and had mothers and fathers with at most high school education.

At the 1-month home visit, 95.0% and 13.3% of caregivers in the intervention and comparison groups, respectively, stated that the pediatrician provided information on promoting their child's development. As seen in Table 3, in the intervention group, more caregivers themselves or other family members had tried a new play activity with the child in the past month than in the comparison group. Significant differences were not found between the intervention and comparison groups on the total score of the HOME (median: 31.5 and 31.0, respectively; $P = .262$), but the proportion of HOME scores ≥38 were significantly higher in the intervention than comparison group. Scores of items on subscales that pertained to the caregiver's communication with the child ("responsivity of the caregiver," "acceptance of child by caregiver," and "caregiver involvement with child") were not significantly different between the 2 groups. In contrast, items on subscales "learning materials and toys provided to child" and "opportunities for variety in daily stimulation" accounted for the differences. As seen in Table 3, in the past month, more families in the intervention group had made at least 1 toy for their child and reported reading to their children at least twice a week than in the comparison group. Three independent predictors of optimal HOME score emerged from the logistic regression analysis: being in the intervention group (adjusted RR: 3.2; 95% confidence interval [CI]: 1.2–8.3), child age >6 months (adjusted RR: 7.7; 95% CI: 2.5–23.7), and maternal education greater than secondary school (adjusted RR: 5.5; 95% CI: 1.8–17.1).

TABLE 2 Sociodemographic Characteristics of Families

Sociodemographic Characteristics	Comparison Group ($N = 113$), n (%)	Intervention Group ($N = 120$), n (%)
Male gender of child	64 (56.6)	74 (61.7)
Age of child, mo		
0-6	59 (52.2)	54 (45.0)
7-12	26 (23.0)	33 (27.5)
13-24	28 (24.8)	33 (27.5)
Mother's education		
Primary school or less	36 (31.8)	35 (29.2)
Secondary school	9 (8.0)	11 (9.2)
High school	41 (36.3)	50 (41.6)
University	27 (23.9)	24 (20.0)
Father's education		
Primary school or less	14 (12.4)	15 (12.5)
Secondary school	9 (8.0)	12 (10.0)
High school	51 (45.1)	45 (37.5)
University	39 (34.5)	48 (40.0)
No. of children in family		
1	64 (56.6)	68 (56.7)
≥2	49 (43.4)	52 (43.3)
Heating home		
Wood or coal stoves	47 (41.6)	52 (43.3)
Central heating	66 (58.4)	68 (56.7)
Housing		
Shanty home	21 (18.6)	26 (21.7)
Rented apartment	57 (50.4)	57 (47.5)
Owned apartment	35 (31.0)	37 (30.8)
Health insurance		
No insurance	13 (11.5)	24 (20.0)
Government insurance	89 (78.8)	90 (75.0)
Private insurance	11 (9.7)	6 (5.0)

At the 1-week follow-up visit, of the 191 (82.0%) children with minor illness, 78.8% (78) and 72.8% (67) of children in the intervention and comparison groups, respectively, were determined by caregiver history and pediatricians' examinations to have recovered from the initial illness (RR: 0.9; 95% CI: 0.8–1.1). The total number of families who had taken their children for a second visit to a health center for the presenting illness was 33 (17.3%), with no significant group difference in distribution. Of the 180 children who were prescribed medications, 78 (87.6%) of 89 and 70 (76.9%) of 91 (RR: 0.9%; 95% CI: 0.8–1.0) caregivers in the intervention and comparison groups, respectively, totally complied with treatment. Unwarranted medications, such as antibiotics that were not recommended by the pediatricians, were used by 16.5% (15) of caregivers in the comparison group versus 7.9% (7) of caregivers in the intervention group (RR: 2.1%; 95% CI: 0.9–4.9).

After the CDI training, physicians were observed to use 2 counseling skills more frequently: encouraging the caregiver to talk (observed in 45.1% and 99.2% of the visits before and after CDI training, respectively; $P < .001$) and encouraging the caregiver to ask questions (observed in 42.5% and 85.8% of the visits before and after CDI training, respectively; $P < .001$). The median total scores on the Satisfaction with Physician Scale were

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TABLE 3 Stimulation Provided to Child in the Home at 1 Month

Stimulation Provided	Intervention Group, *n* (%)	Comparison Group, *n* (%)	RR (95% CI)
Caregiver tried new play activity with child	110 (91.7)	84 (74.3)	1.2 (1.1–1.4)
Others tried new play activity with child	82 (68.3)	54 (47.8)	1.4 (1.1–1.8)
HOME score ≥38	21 (17.5)	7 (6.2)	2.8 (1.2–6.4)
Family made toys for child	51 (42.5)	12 (10.6)	4.0 (2.3–7.1)
Caregiver read to child	24 (20.0)	4 (3.5)	5.6 (2.0–15.8)

60 (range: 40–60) in the intervention group compared with 59 (range: 37–60) in the comparison group ($P < .001$).

DISCUSSION

This study is the first to use a controlled trial to test the efficacy and the safety of the CDI, a new intervention that is to be promoted by the WHO and UNICEF. We have shown that delivering of CDI messages during acute health care visits by trained physicians resulted in more optimal stimulation in the home environments of the intervention group than in a comparable group of young children who were seen by the same physicians before their CDI training. Being in the intervention group remained a significant predictor of optimal home scores when we controlled for other caregiver and child characteristics.

The few controlled trials that have examined the effects of addressing child development during routine health care encounters have been conducted in Western populations and during visits for well-child care, when parents are more likely to be more receptive to receiving information.[6,22] The question that was addressed for the first time in this study was whether the CDI intervention is efficacious when delivered during 1 acute visit and its follow-up to caregivers who likely are concerned with the physical health of their child and who have no previous relationship with the health provider. This is the prevalent scenario in developing countries where children rarely receive continuous well-child care. The CDI adds ~10 minutes to a health care encounter; this is comparable to other interventions that involve counseling, such as those that promote breastfeeding, optimal nutrition, or home safety. The concrete outcome of this brief intervention, that caregivers in the intervention group were ~4 times more likely to make toys for their young children than those in the control group, has important implications. It indicates that caregivers not only comprehended the importance of stimulation for their child's development but also put thought, time, effort, and creativity into provide this stimulus. This study also has shown that messages other than those that are present in the generic CDI can be added to the intervention. A simple 1-time recommendation about reading to young children that is based on the intensive Reach Out and Read model resulted in salient benefits. We speculate that the success of these brief interventions in engaging caregivers is attributable to the trust in the importance of information that is received from health care providers, the novelty and the attraction of learning how to help children develop, the concreteness and simplicity of the recommendations, and the joyful response that these interventions elicit from the children.

Although the majority of families reported remembering the intervention and messages, not all families were shown to act on these messages. To eliminate the Hawthorne effect, the HOME scale was applied once, after the intervention. We cannot examine, therefore, whether families with lower baseline HOME scores benefited more from the intervention. Higher maternal education and older age of child predicted optimal HOME scores independent of the intervention. Maternal education is widely known as a significant predictor of child health and development. Our findings emphasize the importance of the education of women in promoting the development of their children. The results also suggest that special attention should be given to youngest infants, who may be of highest risk for understimulation. Caregiver-child communication, a major focus of the CDI, was not significantly different between the intervention and comparison groups in this study. In this sample, in which caregiver responsivity and communication already were high, we may not have used sensitive measures to observe this effect. It also is possible that caregiver communication, being a complex construct,[3] requires more intensive interventions than the CDI, which is applied on few occasions. Studies in South Africa and Brazil have demonstrated that interventions with greater intensity than the CDI (1 involving 22 hour-long sessions[36] and the other involving a 50-minute training session postpartum[37]) had a positive effect on mother-child communicative interactions. Future studies are needed to investigate ways in which the CDI can be intensified to have a larger impact, particularly on caregiver-child communicative interactions, and to provide a precise measurement of this impact.

This study provides reassurance for plans to incorporate the CDI with the IMCI. The addition of the CDI to sick-child visits did not adversely affect the outcome of the acute illnesses or the caregivers' compliance with treatment. Because this was a study of efficacy that was conducted under controlled conditions and because of the limitations of obtaining information on compliance

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with treatment from parents, we recommend that this important question be investigated further in future studies of effectiveness. The benefits of linking the CDI to the IMCI are obvious. The IMCI targets infants and young children, who often are brought for nutritional counseling or acute illness. These same children most likely will benefit from messages on child development. The CDI when linked to IMCI therefore should cover children who are in most need. The strategy of using health care visits to monitor child development long has been recognized.[38,39] Linking of the CDI to the IMCI broadens this strategy by using the opportunity of the health visit for minor illness to promote development.

Previous studies have shown that CDI training increases the counseling skills of health care providers (I. Santos, MD, PhD, H. Goncalves, PhD, R. Halpern, PhD, C. Victora, MD, PhD, *Pilot Test of the Child Development of the IMCI "Counsel the Mother" Module: Study Results and Recommendations*, unpublished report, 1999; M. Chopra, MD, PhD, *Assessment of Participants on the Care for Development IMCI Training Course*, unpublished report, 2001). In this study, key elements of counseling—encouraging caregivers to talk and ask questions—were significantly enhanced with CDI training. Caregivers' satisfaction with physicians was high in both groups and although reaching a statistically significant difference, was not meaningfully different between the 2 groups. We have anecdotal evidence that the physicians felt more confident in their relationship with caregivers after they received the CDI training, and more caregivers in the intervention group remarked on the physicians' positive attitude 1 month after the contact. Future studies are needed to determine whether the CDI has a positive impact on caregiver-health care provider relationships and the use of health care services. The CDI would provide a more comprehensive approach to child development if it also could be linked to a system that determines a community's opportunities and priorities on child development and that has professionals trained in identifying and treating children with developmental delays and providing in-depth counseling that is specific to the child's and the family's needs.

The generalizability of this study sample is limited; it is representative of low- to middle-income children who lived in Ankara and whose mothers were not working outside the home. Children in this sample seem to be at low risk for poor developmental outcomes: they were well nourished and cared for, the families were intact, and the fathers were employed. The mean adapted HOME scores, however, were comparable to high-risk samples in Western countries. In a study in the United States of children who were ≤2 years of age and at risk for being removed from their families as a result of abuse or neglect, the mean HOME score was 31.7 (SD: 6.0) compared with 30.4 (SD: 6.1) in our study.[40] Factors that are associated with risk and resilience in home environments differ between populations and need to be identified to guide interventions.[15] In our study, despite high scores on caregiver responsivity and involvement, stimulation for young children was suboptimal.

The long-term effects on child development of such a brief intervention as the CDI are unknown. The WHO justifies the dissemination of this intervention on the basis of the widely known long-term benefits to child development of optimal stimulation during early childhood and the child rights initiative that calls for the "state-of-the-art" information on child health and development to be delivered rapidly for the benefit of all children across the world. The demonstration in this study of the efficacy of this brief intervention and its safety during sick-child visits suggests that the CDI can be recommended globally to be used during health care delivery. Future studies of the effectiveness of the CDI are needed to determine whether it can be applied and sustained for large populations in clinical practice and to determine the long-term effects of this intervention on the caregiving environment of children and on health care provider-caregiver relationships.

CONCLUSIONS

Developing countries are not benefiting from the state-of-the-art of health and early childhood programs in developed nations.[12,41–43] The feasibility of the CDI, the brevity of the training for any health professional, and the CDI's ease of application during acute visits make the CDI a unique intervention with the potential of having an impact on child development, particularly throughout the developing world. Its rapid dissemination is needed to begin decreasing the discrepancies between developed and developing countries with regard to the promotion of child development.

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Ilgi Ozturk Ertem, Gulsum Atay, Bahar Emine Bingoler, Derya Gumus Dogan, Asuman Bayhan and Dolunay Sarica
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A Clinical Experience of Autism in India

Vibha Krishnamurthy, MD

India is a country with a population of 1 billion people, of which 35% are children under the age of 14.[1] No epidemiological studies looking at the prevalence of autism have been done in India. However, if we extrapolate using most recent estimates of 1 in 150 children in the United States having autism spectrum disorder,[2] there are about 2.3 million children with autistic spectrum disorder in India.

HISTORICAL OVERVIEW OF AUTISM IN INDIA

Of all the developing countries, India perhaps has the most volume of literature on autism, with over 50 articles, books and chapters related to the topic since the early 1960s.[3] In addition to these, there is a small body of unpublished data from various not for profit organizations working with autism in India. The term autism first appears in Indian scientific literature in 1959 (referred to then as childhood schizophrenia),[4] and a few articles appeared in the 1960s. In the 1970s, there were a few centers in India that were diagnosing children with autism. A study conducted in the mid-1990s by T. Daley[3] found that the average age at diagnosis for children with autism was 4 years and 11 months and that the diagnosis for most of the children could be traced to a few professionals and facilities. There was also a marked difference between the younger children and those older than 12 years. The latter's families spent longer searching for a diagnosis (an average of 34 months from the time they first sought help to the diagnosis). The late 1980s and 1990s were a period of increased activity for the small group of individuals and organizations in the field of autism (Barua M, Status report for Rehabilitation Council of India 2006, Unpublished data). In 1991, the first autism specific organization was formed, Action for Autism (AFA), and in 1994, the first school for children with autism opened in Delhi. In 1994, the first training program in autism for teachers was started by AFA. The year 1995 was a landmark year for the disability movement in India. The Persons with Disability Act was passed, which offered equal opportunity, full participation, and protection of rights for individuals with disability.[5] However, it did not include autism as one of the disabilities. In 1998, there was a study conducted on the awareness of autism amongst pediatricians, psychiatrists, and psychologists in India.[6] The study revealed that many professionals perceived autism as a rare disorder. It also revealed that most did not consider language disturbances central to the diagnosis of autism. As part of the awareness study, brochures on identifying autism were distributed to 1000 pediatricians in India. Although the impact of this has not formally been measured, there appears to be increased awareness at least in the large cities of India amongst professionals. Increased numbers of referrals are certainly being seen in centers such as ours in Mumbai.

AUTISM IN MUMBAI

Mumbai is the commercial hub of India, a bustling city with a population of 12 million people.[1] It is a cosmopolitan city where a number of languages are spoken and there is a large influx of an immigrant population from other parts of India. Fifty-four percent of the population of Mumbai lives in slums. Mumbai boasts of some of the best medical facilities in the country and has two developmental pediatricians, and three pediatric neurologists, more than any other city in India. It also has five schools for children with autism and two parent support groups specifically for autism.

THE UMMEED EXPERIENCE

The word "ummeed" means "hope" in Hindi, the national language of India. During my fellowship in Children's Hospital, Boston, the need for a center of excellence to provide hope to families of children with disabilities in India, became evident to me. I returned to Mumbai after my fellowship in 1998.

Ummeed Child Development Center began 6 years ago in response to the need for care under one roof for children with disabilities i.e., an interdisciplinary team. At that time in Mumbai, it was the norm to see families trudging across the city from one therapist to another, often getting frustrated because of the inability of the professionals to communicate with each other. The second unique feature of Ummeed was the introduction of the need for professionals to empower parents to work with their own children—an emphasis on "home programs" and decreasing dependency on the therapist, a concept alien to most therapists in Mumbai at that time. The third feature was that Ummeed provided care to all irrespective of their ability to afford care. It is a not-for-profit that is funded by various sources for it's activities, which include, apart from patient care, an early intervention center, being a resource center for inclusive schools, awareness building, training, and research. Today, Ummeed has 32 professionals and sees about 1000 patients a year at the center, in addition to the children we see as part of our outreach programs in schools and community.

From the Ummeed Child Development Center, and Jaslok Hospital and Research Centre, Mumbai, India.

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In the first year of its existence (January 02–03) we saw 111 children with Autism Spectrum Disorder (ASD) at Ummeed. In October 2005, we began the Ummeed Autism Projects. These are 3-month programs aimed at intensive parent training for families who live far away from our center, or whose children do not seem to be benefiting from less frequent intervention. During each program, our behavior therapists work with six parent-child dyads intensively over 3 months, training parents to work with their children. The Ummeed Autism Project (UAPs) run in addition to the less intensive programs for children with ASD. At the end of 3 months, families are encouraged to connect with therapists closer to their home, while the Ummeed therapists continue to provide support and monitoring periodically to the families and therapists in the community.

Autism spectrum disorders are the single largest diagnosis we see at Ummeed, a total of approximately 160 families in 2006, accounting for 17% of children seen at Ummeed. This led us to look more closely at this group of children and families, and the following are my reflections as a developmental pediatrician and medical director at Ummeed.

DEMOGRAPHIC PROFILE OF FAMILIES—THE TIP OF THE ICEBERG

When we looked at the kind of families coming to us for a diagnosis of autism, it seemed clear that those who were approaching us were from a small segment of society. The parents were, for the most part, middle to upper class, well educated (often up to a university level) and clearly a skewed sample. While it is true that for most developmental disabilities the awareness amongst poorer and less educated sections of society is less, it seems particularly marked in the case of autism. Accessibility of diagnostic services for the urban poor is limited and the government hospitals are poorly equipped with staff who is trained to identify and care for children with disabilities.

FROM CONCERN TO DIAGNOSIS

The journey that families make from the time they first have concerns to when they finally get a diagnosis for their child is a long and arduous one in any part of the world. In India, families see an average of 3.5 professionals before they arrive at a diagnosis (Daley, 2004).[3] The average age at diagnosis for families from five cities around India was 4 years and 11 months in the mid-1990s, whereas when we looked at a sample of the population at our center in 2002–2004, the average age at diagnosis was 3 years and 8 months. However, this number is clearly not reflective of the vast number of families with no access to appropriate diagnostic services.

The fact that many families presenting to pediatricians do not get an appropriate diagnosis is not surprising given that there is very little emphasis on child development and behavior in the pediatric curriculum during residency. In my experience in giving talks to residents and practicing pediatricians in the city, both have little knowledge of normal language and play milestones in children. Also, only a few privileged families have access to a pediatrician, and most general physicians would have even less of a background in child development. In India, there is no regulation that requires physicians or other professionals to keep their skills and knowledge up to date, making it not uncommon to see professionals with concepts of autism that were prevalent in the 1960s or 1970s. Myths such as that autism is a "western disorder" and that the "male Indian child speaks late" are commonly believed.

AVAILABILITY OF THERAPEUTIC OPTIONS

In the aftermath of the diagnosis, parents spent their time looking for therapeutic options for their child, which are few and far between. Like diagnostic services, the access to therapeutic services too, for the poor, is limited to the ill-equipped government hospitals. Even for those without financial constraints, resources are limited. There are a handful of Applied Behavior Analysis (ABA) therapists in the city, none of whom have been formally trained and there are also very few speech and language pathologists (most seek lucrative jobs in the United States!).

USE OF COMPLEMENTARY AND ALTERNATIVE MEDICINES

The use of Complementary and Alternative Medicines (CAM) in disorders such as diabetes has been reported in India before.[7] India has a long history of use of traditional medicines (ayurveda, yunani, etc). Likewise, the use of CAM in autism in the west, particularly in the United States is well reported, and the prevalence of their use ranges from 30% to 74% in various studies. CAMs are used by 90% of our families of children with autism. This could reflect the lack of availability of more scientifically proven therapies or treatments, or perhaps have more cultural implications in terms of choice of traditional forms of medicine over others.

IMPACT OF AUTISM ON THE FAMILY

The financial implications, for the family of a child with autism, are significant. There is no insurance system to fall back on, neither does the school system pick up the expenses. Centers like Ummeed that offer subsidized care are too few and far between. Even if care is subsidized, travel is not and families sometimes travel 2 hours each way for a half an hour therapy session. Schools usually have parents pay the salary of an aide in the classroom if the child requires one.

The social stigma of a child with a disability is particularly harsh for a poorly understood disorder like autism. One enterprising mother who started a small school for her son with autism in her home was forced to shut it down when her neighbors protested that they did not want "abnormal" children playing in their neighborhood. Mothers often feel a tremendous sense of isolation as they spend most of their time traveling to therapy sessions and coping with household chores. As in many other parts of the world, fathers feel the cultural pressure not to express emotions. They often start to spend longer hours at work feeling the need to earn more money for a child who is

likely to be dependant on them for a long time. I have many times in my practice urged parents to seek mental health assistance that our center provides, but it is almost never considered a priority and followed-up on. Parents often feel that since it does not directly affect their child, it could not possibly contribute to a positive outcome.

The joint families, where 2 or more generations live together, often offer an excellent support system for parents in the form of care for siblings, sharing of household chores and assisting in the child's care. However, sometimes the patriarch of the family may play a role in postponement of seeking a diagnosis, resistance to implementing behavioral techniques such as ignoring negative behaviors or promoting the development of self-help skills. The joint family is starting to become less common in the urban middle class landscape of India.

SCHOOL AND THE CHILD WITH ASD

There are 1275 government run primary schools in Mumbai. The government run schools are often of poor quality with large student to teacher ratios of 60 to 80 students to one teacher, as well as a high rate of teacher absenteeism. Most families seek better quality private schools that are not bound by government rules to provide education to all. Admission to these schools is based on admission tests, which test students as young as 3 to 4 years on their academic skills. A handful of schools offer inclusive education, usually if the child can cope with the academic demands of the school. The five special schools for children with autism cannot cope with the demand that the city places on them.

THE PATH FORWARD

Over the last decade in India, and Mumbai in particular, there is a sense that we are moving forward with the autism movement. In 2003, the Rehabilitation Council of India, a regulatory government body for all organizations working with disabilities, began a teacher training program culminating in a Diploma in Special Education specific for ASD. A Public Interest Litigation, filed by a parent in New Delhi 4 years ago, has resulted in a recent High Court directive to include autism in the pediatric residency curriculum. Parent support groups have been established in most major cities of the country. The first fellowship in Developmental Pediatrics in India began this year in Vellore in June 2007. Centers like ours have begun innovative programs in training parents to work with their children with autism to cope with the short supply of skilled professionals. An epidemiological study of autism and other developmental disabilities in India is in planning stages.

While much remains to be done, there is no doubt that awareness of autism in India has increased remarkably and we continue to work toward expanding resources to meet this need.

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Concurrent Session 5

Sunday, October 4, 3:15 pm - 4:45 pm

Infant Mental Health Assessment

Kathleen Albus, PhD, NA, Barbara J. Howard, MD, Raymond A. Sturner, MD, Center for Promotion of Child Development, Baltimore, MD

Salon A/B

Infant Mental Health Assessment

Raymond Sturner, MD
Assoc. Professor of Pediatrics
The Johns Hopkins U School of Medicine
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Barbara Howard, MD
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Total Child Health, Inc

Disclosure

Dr.s Howard and Sturner are officers of Total Child Health, Inc. distributor of the Child Health and Development Interactive System (CHADIS, www.chadis.com)

This presentation includes no off-label use of medications.

Objectives

- Participants will be able to discuss the concepts important to describing the spectrum of infant mental health conditions for primary care
- Participants will be able to describe the evaluation process recommended by AACAP for children under 4.
- Participants will be able to describe differences between DC:0-3R classification and the DSM IV.
- Participants will be able to differentiate the different tools for assessing emotional functioning of children under 4.

Introduction

Barbara Howard, MD

Session Overview

- Concepts of Infant Mental Health for Primary Care and Prevention
- DC:0-3R– Current Status and Research
- AACAP Recommendations for Assessment of Young Children
- Tools for Assessing Infant Emotional Functioning
- Discussion: Implications for Primary Care and DBP

Concepts of Infant Mental Health for Primary Care and Prevention

Raymond Sturner, MD
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Resistance to Acknowledging Infant Suffering

- Physical Pain
  - Do they experience it?
  - Maybe it is not significant because of the lack of memory
  - Pain management for infants still not universally accepted (Porter, 1997)
- Abuse and maltreatment
  - Not acknowledged until the 60's (Helfer & Kempe,1974)
- Psychological Pain
  - Rene Spitz1940's films illustrate deprivation distress were considered controversial
  - Pediatric depression not acknowledged until the 70's (Cytrryn & McKnew, 1980)
  - Identification and treatment advances move from adolescents to school aged; last to infants

Resistance to an infant mental health classification system: rationales

- "inappropriate" "over pathologizes" and "medicalizes"
  - normal variation, individual differences, transient behavior and and relationship disturbances
- reduces individuals to "labels"
- minimizes the complexity of the person.

Dimensional vs Categorical

- Dimensional
  - From studies of normal development with statistical cut-offs
  - More empirical; unfettered by conceptual limitations
- Categorical
  - Difference between physical sx and dx
    - E.g., cough caused by TB vs allergies
- Nosology is to classify disorders, not to classify children as problems (Rutter & Gould, 1985)
- Case definitions for triage by severity of limited resources – e.g., insurance benefits and hospitalization
  - Are there some syndromes that are deviant and not part of a continuum? – autism was an example and now thought of as part of a spectrum

Examples of Dimensional

- Child Behavior Checklist (Achenbach & Rescorla, 2000) which can be used with children as young as 18 months
- Infant-Toddler Social Emotional Assessment (Carter, Briggs-Gowan, Margaret, Jones, & Little, 2003), which can be used starting at twelve months.
- Do not have the level of specificity about the intensity, frequency, duration, or onset of specific symptoms that is required in diagnostic classifications such as the DSM.

Combining Categorical with Dimensional

- Comparable for prediction and combination predicts best

  Sub-threshold disorders also are at significant risk for serious dysfunction later
- Examples of combinations
  - diagnosis to decide about treatment for child
  - dimensional scale to monitor child's symptoms over time
  - CHADIS: 0-3 (used 2 mos to 4 years) uses categorical with a severity scale

Goals of a Categorical Assessment of Disorder

- Systematic pattern of co-occurring features (Robins & Guze, 1970)
  - Observed reliably
  - Associated with specific natural history
  - Psychological, psychosocial and neurobiological correlates
  - Environmental risk, familial and genetic factors
  - Treatment responses
- Good Criteria for Infant measure
  - However, all of these validity criteria have *not* been met for most DSM-IV disorders at other ages

Evidence for mental health disorders during infancy?

- Prevalence of clinically significant mental health syndromes is similar to that in older children and even adults (10%).
- Often predictive of psychopathology and impairment in later childhood and adulthood. (for an overview see Briggs-Gowan, Carter, Skuban, & Horwitz, 2001; Egger & Angold, 2006).

Challenges to Diagnosis during Infancy

- Rapid developmental changes
  - Important to understand how problematic emotional states and behaviors change with developmental shifts
- More contextually-based. (Sameroff & Chandler, 1976).
- Prevention-orientation
  - interested in identifying risk as in identifying disorders

Major Approaches to Infant Classification

- Modifications of DSM
  - The Research Diagnostic Criteria-Preschool Age (RDC-PA) (Task Force on Research Diagnostic Criteria: Infancy and Preschool, 2003)
- Separate classification system
  - DC: 0-3

Audience Survey

- How many have heard of DC:0-3? R?
- How many have ever used it in making a clinical report?

DC: 0-3 (1994)

- Consensus diagnostic criteria developed by experienced clinicians through the National Zero to Three organization
- "…initial guide for clinicians and researchers to facilitate clinical diagnosis and planning, as well as communication and further research"

Research Diagnostic Criteria-Preschool Age or RDC-PA (Task Force: Infancy and Preschool, 2003)

- **a developmentally sensitive revision of DSM criteria for preschool mental health researchers.**
- The American Academy of Child and Adolescent Psychiatry (AACAP) sponsored to propose modifications of Axis I DSM diagnostic criteria for use with young children
  - Not designed for <2 years because of the lack of data in that age group
  - to facilitate further research and was never intended to be a stand alone classification system.

DC: 0-3R (2005)

- Revision based on
  1) an initial survey of users of DC:0-3;
  2) a detailed review of the literature, as well as of RDC-PA;
  3) a second survey of users to comment on a preliminary draft of DC:0-3R;
  4) further comments from individuals and identified clinical groups in areas where there was particular uncertainty
  5) a final set of critical reviews of a penultimate revision document by a panel of expert infant mental health clinicians.

Table 1. Comparison of axes in the DSM and DC:0-3 systems

	DSM-IV	DC:0-3	DC:0-3R
AXIS I	Clinical disorders	**Primary diagnosis**	*Clinical disorders*
AXIS II	Personality disorders Mental retardation	**Relationship disorder classification**	*Relationship classification*
AXIS III	General medical conditions	Medical and **developmental disorders** and conditions	Medical and **developmental disorders** and conditions
AXIS IV	Psychosocial and environmental problems	Psychosocial stressors	Psychosocial stressors
AXIS V	Global assessment of functioning	**Functional, emotional developmental level**	***Emotional and social functioning***

Bold indicates a difference between DSM-IV and DC:0-3; Italics indicated a change from DC:0-3 to DC:0-3R

DC: 0-3

- new diagnostic categories
  - regulatory disorders
  - parent-child relationship disorders
- new disorder types
  - e.g., mixed disorders of emotional expressiveness

DC:0-3 : Separate Axis for Quality of Parent-Child

- In DC:0-3, axis II is for reporting relationship disorders, rather than personality disorders
  - "Most valuable contribution" of DC: 0-3
- The Parent-Infant Relationship Global Assessment Scale (PIR-GAS) (provided in the appendix)
  - 0-100 scale of intensity, frequency and duration of relationship difficulties. Additionally, Axis II provides a Relationship Problems Checklist which guides.
  - Assesses:
    - behavioral quality,
    - affective tone,
    - psychological involvement in the child's primary care relationship(s)
  - Identifies;
    - disorders that arise from dysfunction in a specific relationship
- Relationship Problems Checklist
  - whether and in what way any caregiving relationship is dysfunctional.

DC: 0-3R: Axis II title change: drop "disorder"

- "relationship disorder classification" becomes "relationship classification"
  - Reflects lack of empirical support for them as discrete disorders

DC: 0-3R Axis V = "functional emotional development,"

- Rather than a global assessment of overall functioning (DSM)
- Reflects the importance of the quality of the child's play and interactions with parents, other caregivers, and unfamiliar adults in assessing achievement of age-appropriate emotional capacity
- Includes: 1) attention and regulation; 2) forming relationships or mutual engagement; 3) intentional two-way communication; 4) complex gestures and problem-solving; 5) use of symbols to express thoughts and feelings; and 6) connecting symbols logically and abstract thinking.

Axis 1 = "clinical disorders."

- Previously was "primary diagnosis"
  - gave many clinicians the impression that they should only make one diagnosis

DC: 0-3 R "reactive attachment"- no longer a disorder

- In the disorder called "reactive attachment deprivation/maltreatment disorder of infancy" the words "reactive attachment" wrongly suggested this disorder was meant to reflect qualitative features of attachment relationships, features that would be coded more appropriately on Axis II.

DC: 0-3R- more anxiety and depression subtypes based on new research

- Anxiety disorders – 5 subtypes,
  - evidence for their validity for ages 2 – 5
- Depression – 2 subtypes
- New NOS category for anxiety and depression
  - Avoids overlooking children with less specific manifestations

Minimizing the chance of including transient things

- Anxiety symptoms must:
- (1) cause the child distress, or lead to avoidance of activities or settings associated with the anxiety or fear;
- (2) occur during two or more everyday activities, or within two or more relationships;
- (3) be uncontrollable, at least some of the time;
- (4) persist for at least 2 weeks (note that for some disorders the duration is longer than 2 weeks); and
- (5) impair the child's or the family's functioning, and/or the child's expected development.

DC: 0-3R –to "regulatory disorders" added "of sensory processing"

- Extensive feedback from occupational therapists was weighed with limited research, validity of such syndromes as distinct disorders seemed far from clear.
- Require criteria for each subcategory diagnosis under this
- Sensory dysregulation always required

DC: 0-3R – DSM-IV Criteria for ASD over DC: 0-3 dx

- Yielding to new research supporting DSM – IV criteria for ASD
- Go with ASD dx rather than Multisystem Developmental Disorder except under age 2

DC: 0-3– Key Points

- Response to the need for diagnostic criteria specific to infants and toddlers
- Intended as an adjunct to existing systems
- Clinical reports indicate adequate inter-rater reliability
- Outpatient child psychiatry studies suggest highest prevalence of regulation disorders, disorders of affect, and PTSD
- Concordance between DC: 0-3 disorders and standard comparisons suggests validity

"Crosswalks" for billing

"Train frontline providers to recognize and manage mental health issues" (National Action Agenda of USPHS, 2001)

- Primary care pediatricians lack the diagnostic tools or even the vocabulary to evaluate variations in clinical presentation that require early intervention and preventive care.

DC: 0-3 vs typical pediatric approach e.g., Bright Futures

- Bright Futures mental health questions
  - Example suggested 6 mos. questions:
    - "Does your child seem to get anxious or easily upset?"
    - "How does your baby calm himself? How much does your baby cry?"
    - "What helps to calm your baby?"
- How are pediatricians supposed to communicate severity of these problems?
- How will they convince insurance companies that there are families that have problems that should lead to reimbursed care?
- How will we document success of prevention research?
- How is collection of anecdotal data for mental health differ from now discredited informal questions about development

Why adapt DC: 0-3 for primary care?

1. Only professionals with both access and clinical experience
2. Only professionals who can dx and manage frequently associated physical symptoms
3. They have no clinical tools that will support their mandate to address mental health issues in this age.
4. Primary care doctors have no guidelines for referral or for identifying cases where pediatric advice might be appropriate.
5. DC: 0-3R needs pediatric input. It is used mainly for ages 2 to 5 years when mental health professionals begin to have access to children – further adaptations are needed for < 1 year.

Adaptation to primary care

- Lesser degrees of dysfunction
  - Needed for prevention
    - Like hypertension – need asx but clinically demonstrable abnormality
      - Asx with markers as well as sx but not severe enough to be disordered
      - Parent child interaction training w/o dx of disorder to prevent disorders
  - Children who do not meet dx criterion but are impaired had similar outcomes to those who met criteria but were unimpaired
    - DSM uses NOS for this but 0-3 doesn't
- Recognize strengths

(Sturner, et al. A Proposed Adaptation of DC: 0-3 for Primary Care, Developmental Research and Prevention of Mental Disorders. Infant Mental Health Journal, 2007)

DSM-PC Predicting Outcomes 1 yr later

DSM-PC Status T-1	T-2 Problem	T-2 Disorder	T-2 Problem or Disorder
No Diagnosis (N=14)	14%	0%	14%
Variation (N=10)	20%	20%	40%
Problem (N=18)	33%	33%	67%
Disorder (N=16)	19%	63%	82% (Sturner, et al., 2005)

DC: 0-3R PROVISIONAL DIAGNOSES (n = 400) DETAILS ON SIGNIFICANT RELEVANT BEHAVIORS

Sleep Behavior Disorders:
Sleep Onset Pattern (20)
Night Waking Pattern (4)

- Time to fall asleep:
  - Put in bed asleep (63)
  - Less than 10 minutes (109)
  - 10-20 minutes (76)
  - 20-30 minutes (24)
  - Greater than 30 minutes (6)
- Number of night wakings:
  - One (117)
  - Two (69)
  - Three (35)
  - Four (3)
  - Five or more (2)
- Parent must stay in room for child to fall asleep (65)
- Number of times parent must re-enter room at bedtime:
  - Once (81)
  - Twice (17)
  - Three times or more (12)
- Total time awake during the night:
  - 10 min or less (11)
  - 10-20 min (5)
  - 20-30 min (4)
  - More than 30 min (4)

DC: 0-3R PROVISIONAL DIAGNOSES (n =400) DETAILS ON SIGNIFICANT RELEVANT BEHAVIORS

Feeding Disorders:
State Regulation(0)
Caregiver-Infant Reciprocity(0)
Infantile Anorexia (4)
Sensory Food Aversion (2)
Concurrent Medical Condition (0)
Insults to the GI Tract (0)

- Child gaining weight as parent expects:
  - 'No' (15)
  - 'Unsure' (52)
- Parent reports that child has more trouble eating than others
  - 'Yes' (23)
  - 'Unsure' (60)

DC: 0-3R PROVISIONAL DIAGNOSES (n = 400) DETAILS ON SIGNIFICANT RELEVANT BEHAVIORS

Regulation Disorders:
Hypersensitive-Fearful-Cautious (0)
Hypersensitive-Negative-Defiant (0)
Hyposensitive-Underresponsive (0)
Sensory Seeking/Impulsive (23)

- Sensory over-reactivity (sounds; touch; smell; taste; lights; swinging; etc): with the exception of loud noises (49), minimal over-reactivity was endorsed
- Sensory under-reactivity (0)
- Child 'often' or 'almost always' craves and gets excited by strong touch, sounds, or movement (105)
- Child 'often' or 'almost always' seems driven to move around, as if by a motor (61)
- Child 'often' or 'almost always' extremely active (51)

DC: 0-3R PROVISIONAL DIAGNOSES (n)
DETAILS ON SIGNIFICANT RELEVANT BEHAVIORS (n)

Disorders Secondary to Life Events:
- PTSD (0)
- Deprivation-Maltreatment (0)
- Bereavement/Grief (0)
- Adjustment Disorder (1)

Most commonly endorsed life events:
- New child in family (81)
- Change in childcare situation (70)
- Family member suffering health problems (26)
- Family financial problems and/or unemployment (22)
- Family member suffering severe stress (12)
- Child underwent upsetting medical procedure (11)
- Death of a family member (10)
- Family member suffering emotional problems (10)

DC: 0-3R PROVISIONAL DIAGNOSES (n)
DETAILS ON SIGNIFICANT RELEVANT BEHAVIORS (n)

Mood/Anxiety Disorders:
- Separation Anxiety (0)
- Specific Phobia (0)
- Social Anxiety (0)
- Generalized Anxiety (0)
- Depression (0)
- 'Mixed Emotional Expressiveness' (0)

- Child 'often' or 'almost always' extremely upset about separation from parent (40)
- Child 'often' or 'almost always' fussy or cranky (27)

AACAP Recommendations for Assessment of Young Children

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AACAP Practice Parameter For Infant/Toddler Assessment

(Journal of the American Academy of Child & Adolescent Psychiatry, 1997)

- Focus on prevention
- Biopsychosocial perspective
- Developmental perspective
- Parent-child relationship as focus of treatment

AACAP Practice Parameter: Key Assessment Elements

- Appearance
- Reaction to new settings
- Self-regulation
- Motor development
- Speech
- Thought
- Affect
- Play
- Cognitive function
- Relatedness

The following outline & references are taken from expert panel review of assessment:

Thomas J et. al., 1997, Practice Parameters for the Assessment of Infants and Toddlers (0-36 Months), www.aacap.org

A. The purposes of the assessment are:

1. To develop with parents (and child (4+)) a shared understanding of the core concerns;
2. To determine whether psychopathology or conditions that lead to risk are present;
3. To establish a developmentally based differential diagnosis and an ongoing mutual process of formulation;
4. a. To develop with the parents a treatment plan that addresses the parents' explicit and implicit expectations and facilitates supportive parent-child relationships.(0-3)
   b. To facilitate the child's and family's cooperation and engagement in treatment (4+).

B. To accomplish these purposes, the aims of the assessment process are

1. To establish with the parents an ongoing therapeutic relationship built on respect;
2. To assess the nature, severity, and developmental impact of the child's behavioral difficulties, functional impairment, or subjective distress on the child and on the family.
3. To identify mutually influencing biopsychosocial, individual, family, and sociocultural risk and protective factors.

C. Special considerations in the assessment of 0-3

1. Assessment and intervention are unified and oriented toward prevention.
2. Infants and toddlers are maximally dependent on parents, the parents are primary in the treatment team.
3. A multidimensional biopsychosocial approach is essential for understanding complex transactional etiologic factors.
4. A developmental perspective is essential to differentiate normality from risk and pathology.
5. A relationship perspective is essential to understand the power of relationships both in a child's development and in collaborative assessment, intervention, and treatment planning with parents.
6. Multiple assessments over time are needed because infants and toddlers change rapidly in response to internal and external stimuli.
7. Collaborative efforts at all levels support the urgent need and incomparable opportunity to intervene preventively.

Aims of the assessment process:

1. To identify the stated reasons and factors leading to the referral;
2. To assess the nature and severity of the child's:
   - a Behavioral difficulties;
   - b Functional impairments;
   - c Subjective distress.
3. To identify individual, family, or environmental factors that may potentially account for, influence, or ameliorate these difficulties.

Sources of information

A. Accurate assessment of the child requires gathering information from a variety of informants to obtain a picture of the child's functioning over time and in a variety of settings.

B. For most children, the essential informants include:
   - a. the parents or other primary caregivers.
   - b. the child.
   - c. the extended family.
   - d. the school or day care personnel.
   - e. the pediatrician. .

C. For children involved with the child welfare or juvenile justice system, or in institutional care, it is important to obtain records and current information from the agencies, caseworkers, and caretakers working with the child.

E. Records of relevant prior pediatric, psychiatric, psychological, or special educational evaluations should be reviewed.

A. Family (caregiver) Interview

1. The family interview ideally includes all primary caregivers and may include other important sources of support.
2. A good working alliance with the family is primary.
3. Most clinicians require 3 to 5 sessions to complete an assessment. Special circumstances may necessitate an abbreviated assessment. (0-3)
4. Components agreed on by most practitioners include:

a. Family sessions. The infant or toddler is usually present in order to facilitate observations of interactions and relationships during the interview and play. Siblings and other children living with the patient also are often present. (0-3). It is important to interview the parents and child together (4+).

b. Parents session. Parents usually feel that an opportunity to meet with clinicians alone is helpful.

c. Child session(s). It often is helpful (0-3) to interact, play, and talk with the child alone, especially in the case of toddlers aged 18 months and older. It is essential to interview the child separately in cases of suspected abuse and children 11+ (BJH).

B. Parental account of reason for referral and present illness.

1 Reason for referral:
- a Clarify who is concerned, why, and why help is being sought now
- b. Define and discuss parents' attitudes towards and explicit and implicit expectations of referral.

2 Details of current problem, including nature of difficulties, and for each facet of current problem:
- a Duration;
- b Frequency and intensity;
- c Precipitants, if any;
- d Circumstances in which problem occurs;
- e Consequences, including:
  - (1) Degree of associated distress;
  - (2) Interference with social, family, cognitive, emotional, and/or academic functioning;
  - (3) Adverse impact on development.
- f Attitudes of parent, child, peers, and others toward problem behavior;
- g Details of prior attempts to obtain help for problem.

C. Discussion of practical and administrative matters.

1. Duration, format, and scheduling of assessment;
2. Cost and payment arrangements.
3. Confidentiality, including permission to obtain relevant records and informed written consent to share the results of the assessment with specified professionals.
4. Preparation of the child for interview;
5. Consent as to who is to receive reports of the evaluation.

D. Parents' reaction

Consider and address parents' and child's reaction to interviewer's age, sex, ethnic characteristics, institutional setting, and other aspects of the interviewer or setting of the assessment.

E. Developmental history in context of family.

1. The developmental history elicits both the objective facts of the child's development up to the present and the emotional significance of these facts for the family and child.
2. The relevant chronology may be in terms of important events in the child's or family's life or relative to the development of other siblings.
3. Circumstances of conception, pregnancy, adoption, infancy:
   - a Was the pregnancy planned and/or wanted? What was going on in the family at that time, including severe maternal stresses?
   - b Prior pregnancies, miscarriages, abortions;
   - c Complications of pregnancy, including maternal alcohol or drug use;
   - d Labor and delivery;
   - e Circumstances of adoption;
   - f Early infancy, including temperament and patterns of regulation and attachment.

4 Physical development and medical history:

a Physical growth: height, weight;

b Fine and gross motor development and coordination, including tics, hyperactivity;

c Eating behavior and attitudes;

d Toilet training and lapses;

e Sleep patterns;

f. Medical history: hospitalizations, operations, serious injuries (especially head trauma); physical disabilities; chronic and acute illnesses; seizure-like episodes; allergies; vision or hearing impairments; exposure to lead or other toxins; medications;

g. Sexual development: pubertal status, noting precocious or lagging development; masturbation, other sexual activity.

5 School functioning:

a Speech and language:
- (1) Milestones: first words, first sentences;
- (2) Receptive and expressive languages abnormalities;
- (3) Speech or articulation abnormalities.

b Cognitive and academic strengths and weaknesses;

c Attention span, concentration;

d School history, including problems with separation or attendance; changes in schools; disciplinary problems;

e Motivation to learn and explore the world;

f Tolerance for frustration or criticism;

g Attitude toward authority;

h Organizational skills;

i Special educational or advanced placements.

6 Emotional development & temperament:

a Mood and affect regulation:
- (1) Developmentally relevant signs of depression, dysphoria;
- (2) Mood lability;
- (3) Hypomania or mania;
- (4) Suicidal ideation or behavior;
- (5) Irritability.

b Unusual or excessive anxiety:
- (1) Initial precipitants;
- (2) Psychophysiological concomitants;
- (3) Distress, avoidance, impairment;
- (4) Excessive timidity, behavioral inhibition, or withdrawal;
- (5) Obsessions or compulsions.

c Adaptability to new, challenging, or frustrating situations;

- Tolerance for frustrations. (0-3)
- Attitude towards discipline. (0-3)

6 Emotional development & temperament:

d Degree of psychological mindedness, capacity for empathy or humor;

e Sexual interests, concerns, and activities; gender identity and orientation; parental reactions;

f Regulation of aggression, including:
- (1) Excessive aggression and/or aggressive thoughts (including homicidal ones) and circumstances thereof:
- (2) Excessive inhibition of aggression.

g Interest in fireplay or firesetting;

h Running away, destructiveness, or stealing;

i Lying, blaming others;

j Negativism or oppositionality;

k Substance use and/or abuse.

7 Peer relations:

a Number and quality of friendships, including preferences regarding age and gender;
b Social skills and deficits;
c Participation in informal and organized peer activities;
d For adolescents:
(1) Capacity for intimate relationships and romantic interests;
(2) Sexual activity;
(3) Concerns over sexual orientation.

8 Family relationships:

a Child's relationship with parents, siblings, other family members;
b Child's place in overall family system;
c Reaction to family life events, including deaths; births; moves; parental separation, divorce, or remarriage; illnesses; changes in visitation or custody arrangements; foster care;
d Compliance with family rules, chores.

9 Conscience and values:

a Assess conscience in terms of:
(1) Age-appropriate development;
(2) Specific areas of excessive harshness, laxness, or conflict;
(3) Effectiveness in helping child conform to expected family and community norms;
b Religious or ethical concerns;
c Goals and future aspirations:
(1) How realistic;
(2) How congruent with family's values and expectations.

10 Interests, hobbies, talents, avocations:

a Recreational interests alone or with peers; include patterns of television viewing, degree of parental supervision;
b Special talent or interest; if so, how regarded by family, school, or peers;
c Impact of child's problems on enjoyment and involvement with usual recreational activities

11 Unusual or traumatic circumstances:

a Sexual or physical abuse, neglect, overstimulation;

b Alcohol or drug abuse by parent or family member;

c Family, community, or political violence;

d Natural disaster;

e Nature of exposure, reaction of child and family, risk of continued exposure.

F. Assessment of family and community background.

1. Parents:

a. Strengths, weaknesses, areas of conflict as:
   (1) Individuals;
   (2) Marital couple;
   (3) Parental couple.
b. Parental attitudes toward the child, including hopes, fears, expectations, or areas of disagreement regarding child;
c. Parental attachment patterns toward the child over the course of development;
d. Experiences with parents' own families of origin that influence attitudes or behavior toward child;
e. "Internal working models," or what the child represents to the parents and how this may be a source of projections.
f. Quality of temperamental fit between the child and parental expectations.
g. Ethnic, cultural, religious background;
h. Education, occupation, financial resources.

2. Family and household:

a. Composition of family, including nearby relatives;
b. Composition of household, including non-family members;
c. Boundaries and alliances within family and child's role with respect to them;
d. Family's style of communication and problem solving;
e. Prevailing emotional tone of family, especially as it impinges on the patient:
   (1) Supportive;
   (2) Critical or hostile;
   (3) Over- or undercontrol;
f. Family activities, including activities of daily living, leisure and recreational activities;
g. Family expectations and discipline;
h. Family stresses:
   (1) Moves;
   (2) Changes in family or household composition;
   (3) Unemployment, poverty;
   (4) Illnesses, accidents, or other disability;
   (5) Legal difficulties.
i. Housing:
   (1) Adequacy of heating, cleanliness, safety;
   (2) Privacy and sleeping arrangements.

3. Family medical and psychiatric history.

Inquire concerning the past and current history of physical and psychiatric disorders with potential environmental or genetic consequences for child, including history of hospitalization or symptoms impinging on child, and child's reaction.

4. Community and culture, including adverse circumstances.

C. Observation of interactions and relationships (0-3).

Interactional observation is essential to the assessment of the child.

1. Child should be observed with the parents or primary caregivers together, if possible, and may be observed in separate sessions with each parent, to assess relationship-specific symptomatology.
2. Relational assessments may occur with the clinician present or observing through a one-way mirror.
3. A play session with family members is minimally structured to approximate a naturalistic context. Families are asked to play with the child as they would at home.
4. Adaptations of the interactional assessment are expected for children or families who have special needs or requests.
5. Semi-structured, videotaped relational assessments may be used to augment observational data.

C. Observation of interactions and relationships (0-3).

6. Key clinical observations (0-3) include:

a. Parents' ability and willingness to engage with the child.

b. Parental sensitivity, affective responsivity, attunement, capacity to regulate the child's emotional expression, and use of limits.

c. Child's interest in parents and use of parents as support.

d. Child's ability to act autonomously.

e. Thematic content of interactional play and role of parent figures.

D. Infant and toddler mental status exam (0-3)

The infant's or toddler's developmental, social and emotional functioning and style are assessed both within the family and with the examiner.

1. Physical appearance including dysmorphic features.
2. Reaction to new setting and people; adaptation during evaluation.
3. Self regulation: State regulation, sensory regulation, unusual behaviors, activity level, attention span, frustration tolerance.
4. Motor function (gross and fine): Tone, coordination, tics, abnormal movements, seizure activity.
5. Vocalization and speech production: expressive and receptive language.
6. Thought: Fears, nightmares, dissociative states, and hallucinations.
7. Affect and mood: Modes of expression, range, responsiveness, duration, intensity.
8. Play: Structure, content, symbolic functioning, modulation of aggression.
9. Cognitive functioning.
10. Relatedness to parents, other caregivers, examiner.

Additional Evaluation

1. Comprehensive interdisciplinary assessment is ideally completed by an interdisciplinary team, by may be accomplished through referral or consultation (0-3).
2. Components of the assessment, in addition to the parent and child interview, may include assessment in home, child care agency, and school settings and by clinicians in other disciplines (0-3).

As indicated, the child may need to be referred for additional evaluation, including

a. Medical as such as
   1. Physical examination;
   2. Neurological evaluation (including, as needed, electroencephalographic and imaging
   3. Metabolic, endocrinological, or genetic evaluation;
   4. Evaluation of vision or hearing.

b. Formal psychological testing, including psychometric and projective evaluation and/or neuropsychological testing;
c. Developmental pediatrics.
d. Educational assessment (4+)
e. Genetics.
f. Nutrition.
g. Ophthalmology.
h. Audiology.
i. Speech and language therapy.
j. Occupational therapy.
k. Physical therapy.
l. Social and educational services.
m. Social service or agency evaluation of home environment.
n. Community programs for coordination of care and advocacy.

VI. Diagnostic formulation

Provides integrated summary of:

A. Nature of child's difficulties;
B. Predisposing and potential etiological factors;
C. Potential exacerbating or mitigating factors;
D. Concomitants and consequences of child's difficulties;
E. Overview of child's and family's strengths and weaknesses;
F. Establishes a working differential diagnosis (multi-axial).
   a. *DSM-IV* or *ICD-10*.
   b. *DC: 0-3*.
G. Provides current knowledge of prognosis and consequences of symptoms.
H. Implications for treatment and intervention.

H. Development of treatment plan with the family (0-3)

1. The parents' explicit and implicit expectations help guide treatment planning and selection.
2. Reviews with the family their understanding of concerns and the collaborative treatment process.
3. Includes mutually defined, comprehensible terms.
4. Addresses the child's strengths and vulnerabilities.
5. Indicates areas of uncertainty and makes recommendations on further assessment(s).
6. Communicates with the referring clinician, agencies, pediatricians, and schools (with parental consent).
7. Helps parents identify services and facilitates referrals.

VII. Communication of findings and recommendations (4+)

The clinician should:

A. Communicate his or her findings and recommendations to the child and parents in comprehensible terms;
B. Place the findings in the context of the child's overall strengths and vulnerabilities;
C. Indicate remaining areas of uncertainty and nature of the additional assessment(s) needed;
D. Assess the parents' and child's understanding of the clinician's findings and recommendations;
E. With the necessary consent, communicate the findings and recommendations in appropriate terms to the referring clinician or agency;
F. Where treatment or additional assessment are best done by someone other than the assessing clinician, assist parents with finding a suitable referral.

Tools for Assessing Infant Emotional Functioning

Barbara Howard, MD
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Disclosure

Dr.s Howard and Sturner are officers of Total Child Health, Inc. distributor of the Child Health and Development Interactive System (CHADIS, www.chadis.com)

This presentation includes no off-label use of medications.

Ages & Stages Questionnaires®– Social-Emotional (ASQ:SE) J Squires, D Bricker, & E Twombly

- Age range: 6–60 months
- General areas screened: Personal-social (self-regulation, compliance, communication, adaptive functioning, autonomy, affect, and interaction with people)
- Questionnaires for ages 6, 12, 18, 24, 30, 36, 48, and 60 months,
- Parents/caregivers complete questionnaires; professionals score them
- Takes 10–15 min to complete; 1-3 minutes to score
- Validity and reliability: n>3,000 across the age intervals and their families. Reliability is 94%; validity is between 75% and 89%
- English and Spanish

ASQ:SE Parent response scale

- Please read each question carefully and
  1. Check the box that best describes your child's behavior
  and 2. Check the circle if this behavior is a concern
  Most of the time;
  Sometimes;
  Rarely;
  or Never
  Check if this is a concern

ASQ-SE: Example items

1. *Does your child look at you when you talk to him?*
2. *Does your child like to be hugged or cuddled?*
3. *Does your child cling to you more than you expect*
4. *Does your child greet or say hello to familiar adults?*
5. *Does your child seem happy?*
6. *Does your child like to hear stories and sing songs?*
7. *Does your child seem too friendly with strangers?*
8. *Does your child seem more active than other children her age?*

Brief Infant Toddler Social & Emotional Assessment (BITSEA) Briggs-Gowan, & Carter, 2001

- One of the few comprehensive parent-report evaluations of functioning
- screener for behavioral, emotional, social, and developmental problems of 1- and 2-year-olds.
- 60 items from the Infant-Toddler Social and Emotional Assessment (ITSEA)
- items selected based on expert opinion and factor loadings.
- Rated on a 3-point likert type scale,
- Yields "problem" and "competence" scores.
- Normative sample for the ITSEA n=1280 racially and SES diverse community, 237 EI.
- Subset of 173 community and 123 EI families used to compare ITSEA to the BITSEA.

BITSEA

- "Cutpoints" set at 25%; scores below that not necessarily indicating psychopathology, but need further evaluation.
- Acceptable internal consistency for the problem scale (.83 in the community sample, .89 in the referred sample) and variable internal consistency for the competence scale (.66 in the community sample, .75 in the referred).
- Test-retest reliability was excellent to good (ICC=.82 for the problem scale, .72 for the competence scale).
- BITSEA and ITSEA demonstrated significant correlations.
- In a community sample, sensitivity to scores on other measures of infant/toddler sx from 81.0 to 96.7, and specificity 80.3 to 88.1.
- Correlations between BITSEA scores, evaluator ratings of psychopathology, and parent reports of family functioning and stress were generally acceptable.
- Takes 7-10 minutes to complete.

ITSEA/BITSEA Response Format

- Dimensional scale/rating
  - Rarely, not true
  - Somewhat or Sometimes true
  - Very true or often true

Itsea (Bitsea) Domains, Scales & Sample Items

Internalizing

Depression/Withdrawal

"Looks unhappy or sad without any reason"

General Anxiety

"worries a lot or is very serious"

"is very worried about getting dirty"

Separation Distress

"Hangs on you or wants to be in your lap when with other people"

Inhibition to Novelty

"Is quiet or less active in novel situations"

Itsea (Bitsea) Domains, Scales & Sample Items

Externalizing

- **Aggression/Defiance**
  - "Has temper tantrums"
  - "Hits bites or kicks you (or other parent)"
- **Activity/Impulsivity**
  - "Is restless and can't sit still"
  - "Gets hurt so often that you can't keep your eyes off him"
- **Peer Aggression**
  - "Won't let other children play with his/her group"
  - "Hits, shoves, kicks or bites other children"

CHADIS 0-3 (Albus, Sturner, Howard, Egger, Emde, Thomas, Wise, 2009)

- Collects data on daily routines and functioning e.g eating, sleeping
- Assesses all DC: 0-3R diagnostic criteria, incl: traumatic stress disorder; anxiety disorders; grief; mixed disorder of emotional expressiveness; adjustment disorder; regulatory disorders; sleep disorders; eating disorders; and disorders of relating and communicating.
- Translation of DC: 0-3R diagnostic descriptions into definable criteria by concensus; where specific guidelines in DC: 0-3R, these were utilized.
- Where no specific DC: 0-3R guidelines but comparable disorders in the DSM-IV or DSM-PC, effort to be consistent.
- Modeled after DSM-PC categories of "variation," "problem" and "disorder," based on degree of disruption of child and family life and/or # symptoms endorsed, as appropriate.
- Focus also on assets
- Ages 2 months- 4 years
- Takes 10-30 min depending on concerns endorsed
- Test-retest reliability satisfactory
- Validity vs BITSEA, ITQ, CBCL, PAPA underway n=450

Regulation Disorders of Sensory Processing, Hypersensitive Type A: Fearful/Cautious

General Information: includes 3 FEATURES: (1) sensory processing difficulties, (2) motor difficulties, and (3) a specific behavioral pattern.

Hypersensitive Type A: Fearful/Cautious

- Sensory Reactivity Patterns: These patterns are characterized by over reactivity to sensory stimuli, including light touch, loud noises, bright lights, unfamiliar smells and tastes, rough textures, or movement in space... *("Does your child over-react to any of the following?"—Being touched lightly; Being touched firmly; Loud noises; Bright lights; Smells; Tastes; The feeling of clothing; Swinging or being tossed in the air)*

- Motor Patterns… *(one or more of the below)*
  - Difficulties with postural control and tone *("Does your child seem coordinated?"—Never/Almost Never; OR "Does your child's body seem too tense or stiff?"—Almost Always; OR "Does your child's body seem too floppy?"—Almost Always)*
  - Difficulty in fine motor coordination… *(Only assessed among children older than 6 months: "Does your child use his/her hands well?"—Never/Almost Never)*
  - Difficulty with motor planning *(Only assessed among children older than 6 months: "Would you use the word 'clumsy' to describe your child?"—Yes)*
  - Less exploration than expected for age *(Is your child very hesitant to try new physical moves like jumping or being swung?—Often or Almost Always)*
  - Limited sensory-motor play *(Only assessed among children older than 6 months: "Does your child avoid touching or mouthing certain things because of how they feel?"—Almost Always)*

- Behavioral Patterns: Behavioral patterns of infants and young children with Type A: Fearful/Cautious Hypersensitivity include excessive cautiousness, inhibition, and fearfulness… *(one or both of the following)*
  - *(Children over 6 months) "Would you use the word 'cautious' to describe your child?" (Yes)*
  - *"Does your child quit doing something because it gets to be too much for him/her?" (Often or Almost Always)*

Early Childhood Screening and Assessment (ECSA) (Gleason, 2006)

- 40 item screening tool for infant and parental psychosocial fx
- Ages 18-60 months.
- Response options include 0,1, 2 and + for "want help with this".
- Cut score is 18 for the first 36 questions (child).
- Final 4 questions concern parental depression (same as the 2 PRIME questions), stress and frustration.
- 5th grade reading level
- Takes 5-10 minutes.
- Spanish version is available but not yet validated.
- Preliminary validation data (n=320) vs BITSEA sensitivity 86% and specificity 83% with "any disorder".
- 0.83 correlation with the CBCL scale for 1 1/2-5 yr olds using the 36 child items.

Early Childhood Screening and Assessment (ECSA): Response Format

- Please check the response that best describes your child compared to other children the same age. Please check ONE RESPONSE from among the first three
- For each item, you may also check the 'I am concerned' option if you would like help with a particular issue
  - Rarely/Not True
  - Sometimes/Sort of True
  - Almost Always
  - Very True

Early Childhood Screening and Assessment (ECSA): Example Items

- Seems sad, cries a lot
- Difficult to comfort when hurt or distressed
- Loses temper too much Rarely/Not True
- Avoids situations that remind of scary events
- Easily distracted

Preschool Age Psychiatric Assessment (PAPA)

- Egger, Ascher, & Angold, 1999
- Derived from the CAPA
- Assesses all DSM-IV and ICD- criteria for preschoolers & DC: 0-3R
- Includes assessments of disability resulting from sx, family environment and relationships, family psychosocial problems, and life events.
- Guided by glossary of diagnostic definitions and mandatory as well as discretionary probes
- Actual diagnoses may be concluded from examples and from the entire interview
- Families asked about sx in the 3 months preceding.
- Requires trained interviewer
- Takes 1½ hours to administer, with # items varying by clinical judgment
- Test-retest reliability kappa from .39 for Generalized Anxiety Disorder to .87 for enuresis (Egger et al, 2006).

PAPA Sections

Family Structure and Function;
Play and Peer and Sibling Relationships;
Daycare/School Experiences and Behaviors;
Other Food Related Behaviors;
Sleep Behaviors;
Elimination Problems;
Somatization;
Accidents;
Oppositional Defiant Disorder/Conduct Disorder;
Attention Deficit Hyperactivity Disorder;
Separation Anxiety Disorder;
Anxious Affect;
Worries;
Ritual and Repetitions;
Tics;
Stereotypies;
Reactive Attachment;
Depression;
Mania;
Dysregulation;
Life Events;
PTSD;
Disabilities;
Parental Psychopathology;
Marital Satisfaction; and
Socioeconomic Status.

Discussion of Implications for Primary Care and DBP

Panel and Participants

Some issues…

- Developmental variation and diagnosis
- Developmental progress and diagnosis
- Cultural differences and expectations
- Labeling
- Assessing the environment/parenting
- Practicality of assessment in different settings: Primary care; DBP: infant MH
- Need for a research base

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SDBP
Society for Developmental & Behavioral Pediatrics

Concurrent Session 6

Sunday, October 4, 3:15 pm - 4:45 pm

Poster Symposium: Developmental Disabilities in Early Childhood: From Early Detection to Treatment Decisions

Abstracts 16-20

Development of Children Born Prematurely: Advantage of Beginning Early Intervention in The First Year of Life
Anne M. DeBattista, MSN, PNP, Developmental and Behavioral Pediatrics, Lucile Packard Children's Hospital, Palo Alto, CA, Julie A. Slay, PhD, Lynne C. Huffman, MD, Outcomes Measurement and Research, Children's Health Council, Palo Alto, CA, Heidi M. Feldman, MD, PhD, Developmental Medicine, Stanford University, Palo Alto, CA

Missed Opportunity for Developmental Support During Hospitalization: A View from A Developing Country
Emine Bahar Bingoler Pekcici, Pediatrician, Gulden Ekici, Specialist, Emine Kocak, Specialist, Pediatrics, Kecioren Research- Training Hospital, Ankara, Turkey, Mesut Kocak, Pediatrician, Pediatrics, Kecioren Training- Research Hospital, Ankara, Turkey, Gonca Yilmaz, Pediatrician, Pediatrics, Kecioren Research- Training Hospital, Ankara, Turkey

Structural Barriers to Early Intervention Services for Foster Children in Massachusetts
Laurel K. Leslie, MD, MPH, Medicine and Pediatrics, Tufts Medical Center, Floating Hospital for Children, Boston, MA, April D. Chang, MPA, MA, Heller School for Social Policy and Management, Brandeis University, Waltham, MA, Maia Hurley, PhD, MPP, Public Consulting Group, Boston, MA, Justeen Hyde, PhD, Institute for Community Health, Cambridge, MA, Milena Doerfer, BA, Center on Child and Family Outcomes, Tufts Medical Center, Boston, MA

The Persistence of Sleep Disturbance in Children Evaluated for Autism Spectrum Disorders: Predictive Factors and the Impact of Co-Occurring Diagnoses
Celeste E. Flachsbart, M.A., Graduate Department of Clinical Psychology, George Fox University, Newberg, OR, Trevor A. Hall, Psy.D., Northwest Neurobehavioral Health, Boise, ID, Mary Peterson, Ph.D., Wayne V. Adams, Ph.D., Graduate Department of Clinical Psychology, George Fox University, Newberg, OR

Complementary and Alternative Medicine Use in Children with Cerebral Palsy
Laura T. Weissman, MD, Dicision of Developmental Medicine, Eugenia Chan, MD, MPH, Division of Developmental Medicine, Laurie Glader, MD, General Pediatrics, Children's Hospital Boston, Boston, MA

Salon C/D

Abstract 16

Development of Children Born Prematurely: Advantage of Beginning Early Intervention in the First Year of Life

Anne M. DeBattista, MSN, PNP, Developmental and Behavioral Pediatrics, Lucile Packard Children's Hospital, Palo Alto, CA, Julie A. Slay, PhD, Lynne C. Huffman, MD, Outcomes Measurement and Research, Children's Health Council, Palo Alto, CA, Heidi M. Feldman, MD, PhD, Developmental Medicine, Stanford University, Palo Alto, CA

Purpose: Implementation of federal legislation IDEA Part C varies across states and few states consider biological risks in determining eligibility for early intervention(EI). Differences in age of enrollment and intensity of services may affect rates of developmental progress in this population.The purpose of this study is to compare rates of developmental progress as a function of timing and intensity of services. Methods: 84 preemies(mean GA= 30.5 weeks, range 24-36 weeks)were followed prospectively from birth to age 3 years. For each child, data were collected from EI agencies with respect to the timing, intensity, and duration of EI services. Based on the start date of EI services, children were divided into 3 groups:(1)children who began intensive EI before age 1 year(Early EI);(2)children who were monitored before age 1 year and began intensive EI after age 1 year(Early monitoring-Late EI);and,(3) children who began intensive EI after age 1 year(Late EI).To assess developmental progress, evaluations including the Vineland Adaptive Behavior (VABS)Composite Standard Score were collected when the child was 4 months and 36 months of age. A VABS change score was calculated for each child (score at 36 months - score at 4 months). Chi-square and t-tests were used to compare groups in terms of sociodemographic variables. ANCOVA was used to compare change scores by group, controlling for total EI service hours and 4 month VABS scores. Results: The 3 groups were similar in terms of sociodemographic and gestational age characteristics. Overall, mean VABS scores at 36 months were in the low average range. VABS scores were lower at 36 months than at 4 months. Children in the Early Monitoring and Late EI had significantly more negative mean change scores than the children in the Early EI group. Conclusion: In this sample of preemies, receipt of intensive EI before age 1 year led to greater developmental progress than starting EI services after the 1st year of life.

Impact of Timing and Intensity of EI on Developmental Progress

	Number of Children	Mean Change Score	Sig.
Early EI	21	-5.81	
Early Monitoring-Late EI	18	-12.06	.05
Late EI	34	-12.41	.05

Abstract 17

Missed Opportunity for Developmental Support During Hospitalization: A View from a Developing Country

Emine Bahar Bingoler Pekcici, Pediatrician, Gulden Ekici, Specialist, Emine Kocak, Specialist, Pediatrics, Kecioren Research- Training Hospital, Ankara, Turkey, Mesut Kocak, Pediatrician, Pediatrics, Kecioren Training- Research Hospital, Ankara, Turkey, Gonca Yilmaz, Pediatrician, Pediatrics, Kecioren Research- Training Hospital, Ankara, Turkey

Purpose: In low and middle income countries where well-child care may not be optimally available, hospitalization of young children is an important period that may enable the opportunity to detect developmental difficulties and to support child development. The purpose of this study was to detect the rates of developmental difficulties and the need for developmental support in children aged 0-3 years that were hospitalized during an acute illness at Kecioren Research and Training Hospital in Ankara, Turkey. Methods: All children aged 0-3 years who were hospitalized during a 6-month period were assessed by two specialists with the Guide for Monitoring Child Development (GMCD). The GMCD is a practical, open- ended interview that catalyzes communication between clinicians and caregivers, obtains a portrayal of the child's development, has been standardized and validated for Turkish children and is being used internationally. Results: Of the 250 patients, 56% were boys and median age was 8 months (range: 1- 35 months). Most mothers (51%) had only primary school education and 43% were younger than 25 years of age. Most patients were hospitalized for respiratory tract infections (37%), acute gastroenteritis (8%), or urinary tract infections (10%). Most mothers (76%) did not have concerns about their childrens development. Only 20 children (8%) had developmental disability requiring early intervention or rehabilitation. Many children however (64%) had developmental difficulties that required counselling about home- based activities that can enhance early childhood development. In only 5% of children, developmental disabilities and difficulties had been detected prior to the hospitalization. The remaining children had received neither services nor counselling. Conclusion: The results of this study demonstrate that developmental difficulties are common, and hospitalization offers an opportunity to detect, and manage such difficulties

Abstract 18

Structural Barriers to Early Intervention Services for Foster Children in Massachusetts

Laurel K. Leslie, MD, MPH, Medicine and Pediatrics, Tufts Medical Center, Floating Hospital for Children, Boston, MA, April D. Chang, MPA, MA, Heller School for Social Policy and Management, Brandeis University, Waltham, MA, Maia Hurley, PhD, MPP, Public Consulting Group, Boston, MA, Justeen Hyde, PhD, Institute for Community Health, Cambridge, MA, Milena Doerfer, BA, Center on Child and Family Outcomes, Tufts Medical Center, Boston, MA

Purpose: This study was designed to identify factors that facilitate or prevent access to and utilization of Early Intervention (EI) services by foster children in the greater Boston area. The 2003 federal Child Abuse Prevention and Treatment Act mandated the implementation of provisions and procedures for referral of a child under age 3 who is involved in a substantiated case of child abuse or neglect to EI services, funded under part C of the Individuals with Disabilities Education Act. Methods: A semi-structured interview guide was developed and in-depth qualitative interviews were conducted with EI providers in the metro Boston area and child welfare workers at the Massachusetts Department of Children and Families (DCF). Results: Analysis of these data, using a process of coding consensus, co-occurrence, and comparison, found that DCF-involved children had unique living situations that compromised the ability of EI providers to conduct an accurate eligibility assessment. For children in foster care, limitations included confidentiality constraints on information shared between EI and DCF, foster parents' incomplete knowledge of developmental histories, and frequent placement changes (often without advance notice to EI programs). Additionally, aspects of program design disproportionately affect foster children and make it less likely that these children will be deemed eligible for services. For example, the requirement to evaluate the current home environment means that eligibility for EI services is based on the foster parent home, and does not take into account the long-term effects of trauma on a child's development. For children involved with DCF but living with their biological parents, mandated referral cases often require more time and resources than those screened into the system from other sources, given complicated trauma histories, parental distrust of public service systems, and a lack of family and social supports. However, reimbursement for EI outreach and services is based on face-to-face contacts, and does not support case coordination or missed appointments. Conclusion: Overall, these findings suggest that implementation of mandated referral policies cannot serve their intended purpose unless the unique needs of abused and neglected children are taken into account from the outset.

Abstract 19

The Persistence of Sleep Disturbance in Children Evaluated for Autism Spectrum Disorders: Predictive Factors and the Impact of Co-Occurring Diagnoses

Celeste E. Flachsbart, M.A., Graduate Department of Clinical Psychology, George Fox University, Newberg, OR, Trevor A. Hall, Psy.D., Northwest Neurobehavioral Health, Boise, ID, Mary Peterson, Ph.D., Wayne V. Adams, Ph.D., Graduate Department of Clinical Psychology, George Fox University, Newberg, OR

Purpose: Mounting research suggests that children with autism spectrum disorders (ASDs) and other clinical diagnoses demonstrate a higher prevalence of sleep problems than typically-developing children. Additionally, sleep problems are related to a number of cognitive, emotional, and behavioral concerns in pediatric populations. Limited research exists comparing sleep problems in children with ASDs with sleep problems in other clinical populations, or exploring the length of these sleep problems. The current study sought to explore the development and improvement of sleep problems over one year, as well as predictors to help identify children at high risk for persistent sleep problems. Methods: Impact of age, cognitive functioning, adaptive functioning, behavioral functioning, and number of co-occurring diagnoses were explored as predictors, and comparisons between clinical groups were made. Subjects were 150 children referred for evaluation for ASDs in a hospital-based ASD assessment clinic. Measures of sleep, cognitive ability, developmental functioning, adaptive behavior, and behavioral functioning were administered in addition to other routine aspects of the multidisciplinary ASD assessment. The sleep measure was again administered one year later, with 49 participants responding. Results: Results indicated that children with ASD did not demonstrate sleep problems at a higher prevalence rate than other clinically-referred children, but both demonstrated prevalence rates at least double that of previously reported typically-developing populations. Additionally, sleep problems measured were persistent over time, showing no alleviation one year later. Finally, the primary predictor for sleep problems across domains and age-groups was daytime behavior problems. Conclusion: These findings lend importance to the assessment and active treatment of sleep problems across clinically-referred populations, particularly for those children with elevated daytime behavioral problems.

Abstract 20

Complementary and Alternative Medicine Use in Children with Cerebral Palsy

Laura T. Weissman, MD, Dicision of Developmental Medicine, Eugenia Chan, MD, MPH, Division of Developmental Medicine, Laurie Glader, MD, General Pediatrics, Children's Hospital Boston, Boston, MA

Purpose: This study examined caregiver use of complementary and alternative medicine (CAM) to treat their child with cerebral palsy (CP). It also examined the types of CAM utilized and caregiver motivation for use of CAM. Methods: We mailed a self-report questionnaire to 584 caregivers of patients 5-18 years of age who had a billing code indicating a diagnosis of cerebral palsy and who

received care in the Cerebral Palsy clinic at Children's Hospital Boston from September 2004-2006. The survey was adapted from previous CAM use surveys conducted at our institution and underwent pre-testing with cognitive interviews of parent respondents. The survey addressed the following domains: type of CP, symptoms and medical care use related to CP, the child's level of physical function, modalities and frequencies of CAM used for the child, reasons for choosing CAM, satisfaction with CAM, and demographics. We used descriptive statistics to analyze our data. Results: After two mailings and a reminder postcard, our response rate was 44%. Respondents were 86% female, 76% Caucasian, 93% high school graduates, with 89% reporting household income greater than $70,000. The childrens' mean age was 10.6 years. Overall, 95% of respondents reported using CAM for their child with CP. The most commonly-used modalities included exercise programs (70%), and other body-based therapies such as hippotherapy (47%), and aquatherapy (42%). Many families reported use of expressive environmental therapies (46%), spiritual practices (39%) and energy or healing therapies (32%). Most respondents (77%) reported using CAM to improve the overall well-being of their child, and 60-80% used CAM to improve specific motor symptoms such as spasticity and tone. In addition, more than 70% of families chose CAM because they were concerned about medication side effects, knew others who had benefited from CAM, liked to use a combination of CAM therapies and prescription medications, or therapies were recommended by friends or families of other children with cerebral palsy. CAM was recommended by physicians 39% of the time. Conclusion: CAM is commonly used in children with CP. Understanding the types of alternative therapies used and the motivation to use CAM in the CP population is essential for educating health care providers and enabling them to improve their care of children with CP. This study is one of the largest studies describing CAM use in the CP population.

Plenary Session 1

Sunday, October 4, 2009 from 9:15 am – 10:30 am

Abstract 1

Epilepsy in Children with ADHD: A Population-Based Study

Shanlee M. Davis, BAS, Mayo Medical School, Slavica K. Katusic, MD, Health Sciences Research, William J. Barbaresi, MD, Pediatric and Adolescent Medicine, Jill Killian, BS, Amy L. Weaver, MS, Health Sciences Research, Elaine C. Wirrell, MD, Neurology, Mayo Clinic College of Medicine, Rochester, MN

Purpose: Prior studies have shown a higher incidence of symptoms of Attention-Deficit/Hyperactivity Disorder (ADHD) in children with epilepsy, but few studies have examined epilepsy in children with ADHD. Our aim was to determine the incidence of epilepsy among ADHD children in a population-based birth cohort and describe the characteristics of children with both ADHD and epilepsy. Methods: All medical records from a previously identified cohort of 358 research identified incident ADHD cases and 728 age- and gender-matched controls without ADHD were reviewed from birth to age 20 for history of a seizure disorder. Data were abstracted from all subjects with seizures including clinical characteristics of seizures, testing, and treatment. Duration of follow-up was calculated from the date of birth until the date of epilepsy or last medical consultation prior to age 20. Cox proportional hazards models were fit to evaluate the association between ADHD status and time to epilepsy diagnosis. The association was summarized by calculating the hazard ratio and corresponding 95% confidence interval. Seizure characteristics were compared between ADHD cases and controls using the two-sided Wilcoxon rank sum test and the Fishers exact test. Results: Over a mean follow-up of 19.2 years for the cases and 18.9 years for controls, ADHD cases were 2.7 times more likely to have epilepsy than controls (95% CI 0.94 - 7.76; p=0.066). Compared to the six controls with epilepsy, the eight ADHD cases with epilepsy developed seizures at an earlier age (median 5.5 vs 15 years; p=0.020) and experienced more frequent seizures (more than monthly, 63% vs 17%; p=0.14). Among the children with ADHD, children with epilepsy were less likely to have received a clinical diagnosis of ADHD compared to children without epilepsy (63% vs 89%; p=0.052), and only half of children with ADHD and epilepsy were prescribed stimulants compared to 85% of the children without epilepsy (p=0.025). Conclusion: Our study suggests that the incidence of epilepsy is higher in children with ADHD than in children without ADHD. Epilepsy in children with comorbid ADHD appears to be more severe than in those without ADHD. Finally, there appears to be a reluctance to diagnose and treat ADHD among children with epilepsy.

Abstract 2

The Global Failure: Barriers in Developmental and Behavioral Pediatrics Residency Training: Survey of Rotation Directors

Samuel H. Zinner, MD, Pediatrics, University of Washington, Seattle, WA, Franklin Trimm, MD, Pediatrics, University of South Alabama, Mobile, AL, Carol Weitzman, MD, Pediatrics, Yale University, New Haven, CT, Sara Kim, PhD, Medical Education & Biomedical Informatics, University of Washington, Seattle, WA

Purpose: To identify specific barriers occurring during the 1-month rotation in Developmental Behavioral Pediatrics (DBP). Methods: BACKGROUND: Pediatricians in practice report persistent discomfort in identifying and managing DBP issues, despite efforts to enhance DBP training, including a mandated 1-month rotation, plus longitudinal training in DBP. Few studies have examined barriers that occur during the 1-month rotation that interfere with preparing MDs to identify and manage DBP issues. METHODS: All DBP rotation directors of US pediatric residency programs were invited to complete an anonymous web-based survey. The 39-item survey was designed by 3 DBP rotation directors from different university-based programs. Items were developed based on related studies and professional experience and covered the following areas: faculty and trainee demographics, training methods and content, funding sources and performance evaluation methods. Rotation directors were contacted up to 3 times over a 2-month period. Results: A total of 129 out of 187 US directors completed the survey (69%). About 1/3 have served in this position over 10 years; over 1/3 are not board-certified DB Pediatricians and about 40% are not Society of Developmental Behavioral Pediatrics members. About 1/3 of programs report being unsuccessful in meeting the 8 Academic Pediatric Association guidelines for DBP training. Resident barriers included: 1) In 30% of programs, most residents take vacation during rotation and in 60% of programs some residents take vacation, and 2) 43% of residents miss aspects of the rotation due to on-call responsibilities. Faculty barriers included: 1) 54% of rotation directors receive no salary support for their role, although 36% reported spending more than 10 hours and often more than 20 hours/month in rotation implementation and 2) 40% of respondents reported that support from their chairman was not adequate. Conclusion: In many programs, resident and faculty barriers continue to interfere with successful implementation of the DBP resident rotation. These barriers contribute to continued discomfort with DBP issues in practice.

Abstract 3

Deletions of Neurexin-1 Predispose to a Wide Spectrum of Developmental Disorders

Ramzi H. Nasir, MD, MPH, Michael Ching, MD, MPH, Developmental Medicine, Yiping Shen , PhD, Laboratory Medicine, Shafali Spurling Jeste , MD, Neurology, Wen-Hann Tan, BMBS, Genetics, Bai-Lin Wu, PhD, M. Med, Laboratory Medicine, Children's Hospital Boston, Boston, MA

Purpose: Neurexin1 (NRXN1), an evolutionarily conserved structural component of the synaptic complex, is essential for proper synaptic function. Research has implicated mutations in neurexin-1 (NRXN1) in a variety of conditions including autism, schizophrenia, and nicotine dependence. To our knowledge, there have been no published reports describing the breadth of the phenotype associated with mutations in NRXN1. Our purpose is to describe the range of phenotypes associated with deletions of neurexin-1 gene in a clinical cohort. Methods: We present a medical record review of patients with deletions involving exonic sequences of NRXN1. We ascertained cases from 3450 patients referred clinically for comparative genomic hybridization (CGH) testing from March 2007 to January 2009. Results: Twelve patients were identified with exonic deletions of variable size and location along the NRXN1 gene. Four cases were confirmed denovo deletions and 5 were parentally inherited from a mildly affected or unaffected parent. The phenotype of individuals with NRXN1 deletion is variable and includes autism spectrum disorders, mental retardation, language delays, and hypotonia. There was a statistically significant increase in NRXN1 deletions in our clinical sample compared to control populations described in the literature ($p<0.0001$). Conclusion: Our study suggests that deletions of NRXN1 predispose to a wide spectrum of developmental disorders. As more patients are identified through CGH strategies, long term follow up and detailed phenotyping will be essential for a clearer understanding of the NRXN1 deletion phenotype.

Abstract 4

Maternal & Infant Risk Factors Associated with Infant Inconsolability: Who is crying now?

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Purpose: To examine the prevalence of infant inconsolability and determine associated infant & maternal risk factors in a population based study. Methods: 7,934 RI women giving birth between 2004-2007 were surveyed using the Centers for Disease Control's Pregnancy Risk Assessment Monitoring System with a 73.8% weighted response rate. Infant inconsolability was defined as being "somewhat" or "very" difficult to calm when crying or fussing with a prevalence of 8%. Mean infant age was 111 d and 89.5% were 2-4 mos. Results: Infant characteristics associated with their inconsolability included birth weight <2500g (10.8% vs. 7.8%, $p< 0.001$) and gestational age < 37 wks (9.9% vs. 6.8%, $p< 0.05$), but not infant age. Maternal characteristics associated with infant inconsolability included: maternal race (W=7.7%, B=7.2%, A= 17.1%, Am Indian=5.6%, Other=12.8%, $p<0.001$), Hispanic ethnicity (12.6% vs. 7.2%, $p<0.0001$), younger maternal age (<20yr=11.9%, >35yr=6.5%, $p<0.001$), lower maternal education (<12th=10.6%, 12th=8.5%, >12th=6.8%, $p<0.01$), lower maternal income (<$15000=10.4%, >$50000=6.5%, $p<0.01$), and public prenatal health insurance (9.9% vs.6.8%, $p<0.001$). Mothers of inconsolable babies were more likely to acknowledge post-partum depressive symptoms (15.7% vs. 6.9%, $p<0.001$) as well as a lack of knowledge of shaken baby syndrome (10.9% vs. 5.5%, $p<0.01$). In addition, these mothers were also more likely to report their own experience with intimate partner violence in the previous 2 years (10.5% vs. 5%, $p= 0.0001$). Conclusion: This study identifies a potentially dangerous association between infant inconsolability, maternal depression, lack of knowledge regarding the safe handling of babies and multiple demographic risk factors including domestic violence. Pediatricians evaluating fussy babies should inquire about maternal mental health and exposure to domestic violence, educate parents on the consequences of shaking an infant and be knowledgeable of community resources to help families with these concerns.

Abstract 5

Increasing Blood Draw Compliance in Children with Autism Spectrum Disorders (ASD)

Ellen Hanson, PhD, Caroline Davit, BS, Rachel Hundley, PhD, Developmental Medicine, Children's Hospital Boston, Boston, MA

Purpose: Previous research shows that children with ASD have increased medical fears and a high prevalence of anxiety problems. We developed an intervention to address anxiety and noncompliance with blood draws for children with ASD. Methods: Participants: Thirty-three children, ages 3 to 13 years, participated in the intervention. Families were offered the parent-administered intervention after endorsing concerns about venipuncture during an enrollment screener for a larger study of ASD. Materials: The Blood Draw Kit includes detailed instructions for the parent and child, an individualized social story, and a Boardmaker picture schedule. Additionally, families are given a kit of venipuncture materials including rubber gloves, alcohol swabs, band-aids, an elastic tourniquet, and a 5ml plastic syringe. Procedure: The overall practice consists of multiple parent-led sessions. Each describes a portion of the blood draw, builds on the session prior, and culminates in the administration of a pretend blood draw. The intervention schedule is flexible and adaptable for the individual. After participation is complete, parents receive a survey to report on their child's experience. Results: Prior to the intervention, 245 children with ASD were seen through the larger study; 35 were unable to successfully complete the blood draw (14%). Since offering the program, 25 of 73 children who completed the research blood draw have participated in the intervention. Of those 25, 24 children successfully gave blood (96%). Children who received the intervention were 4 times more likely to complete the venipuncture than children seen prior to implementing the program (OR= 4.000 (95% CI: 0.524-

30.521)). Participants were recruited using a standardized protocol and did not differ pre- and post- intervention on measures of gender, age, ethnicity, cognitive impairment, or severity of symptoms. Conclusion: Preliminary results show 24 successes to date and an increased compliance rate for the intervention group. Positive response to our program has important implications for venipuncture compliance for children with ASD in both clinical and research settings.

Plenary Session 2

Monday, October 5, 2009 from 9:00 am – 10:15 am

Abstract 6

Reading, Teaching, Play and Verbal Responsivity are Associated with Enhanced Attention at 24 Months

Ruee Huang, MD, Samantha B. Berkule, PhD, Benard P. Dreyer, MD, Karen Hopkins, MD, Alison Smoller, DO, Suzy Tomopoulos, MD, Alan L. Mendelsohn, MD, Pediatrics, NYU School of Medicine and Bellevue Hospital Center, New York, NY

Purpose: Attention, an aspect of self-regulation, is important for learning and behavior. We sought to determine whether the cognitive home environment in low SES infants/toddlers was associated with attention at 24mos. Methods: Longitudinal analysis of mother-infant dyads followed from birth-24mos. Consecutive dyads enrolled in urban public hospital. Inclusion criteria: English/Spanish language, no medical complications. Dependent variable: Attention (24mos) - Infant Toddler Social Emotional Assessment (ITSEA) Attention Subscale. Independent variable: Cognitive home environment (6,14,24mos) - StimQ, with 4 subscales: reading, teaching, play and verbal responsivity. Potential confounders: sociodemographics, maternal depression, 6mo temperament (STSI). Results: 158 children assessed for attention at 24mos. 60.1% of mothers did not graduate HS; 90.5% Latina. StimQ total and reading at 6,14 and 24mos correlated with attention at 24mos (See Table). Correlations also found for teaching, play and verbal responsivity. In multiple regression adjusting for all confounders, StimQ total scores at the 3 ages entered as a set into model accounted for 13.2% of the variance in attention at 24mos ($p<.001$). A 1 SD increase in 6mo StimQ was associated with a .66 times reduction in odds of having attention in the "Of Concern" range ($p=.04$). Conclusion: Reading, teaching, play and verbal responsivity in low SES infants/toddlers are associated with enhanced attention at 24mos. Strategies to enhance these activities, such as Reach Out and Read, should be integrated in primary care. Funding: NICHD R01 HD047740-05, Tiger Foundation, Marks Family Foundation.

Correlations: StimQ (6,14,24mos) with ITSEA Attention

	6mos	14mos	24mos
StimQ Total	.32**	.24*	.37**
Reading	.27**	.19*	.37**
Teaching	.08	.21*	.24**
Play	.18*	.17	.27**
Verbal Responsivity	.28**	.02	.12
			*p<.05, **p<.01

Abstract 7

Occurrence of Specific Written Learning Disorder (WLD) Among Individuals with Mild Intellectual Disability in a Population-Based Birth Cohort

Melissa B. Meier, MD, Robert G. Voigt, MD, William J. Barbaresi, MD, Pediatric and Adolescent Medicine, Robert C. Colligan, PhD, Psychiatry and Psychology, Amy L. Weaver, MS, Slavica K. Katusic, MD, Health Sciences Research, Mayo Clinic, Rochester, MN

Purpose: Special education laws exist to ensure timely intervention for children with learning disabilities. However, these laws consider learning disability and intellectual disability as mutually exclusive categories, excluding many children from evidence-based interventions. Children with primary neurodevelopmental disabilities are more likely to exhibit secondary disabilities. This suggests that children with intellectual disability should have higher rates of WLD than those without intellectual disability and should not be excluded from targeted remedial interventions. Methods: Subjects included 5699 children born between 1976 and 1982 in Rochester, MN who remained in the community after the age of 5 years and who did not have severe intellectual disability. Records from public and nonpublic schools, medical facilities and private tutorial services were reviewed, and results of individually administered IQ and achievement tests were abstracted. Mild intellectual disability was defined by full-scale IQ scores between 51 and 79. WLD was established by research criteria based on 2 discrepancy formulas, 1 regression-based and 1 non-regression based. Results: 91 subjects were classified as having mild intellectual disability based on at least one documented IQ score 79. Among these 91 children, 13.2% (n=12; 5 females, 7 males) met research criteria for WLD while their IQ was 79, compared to 9% (n=502; 139 females, 363 males) of children whose IQ always remained 80 (OR 1.5; 95% CI, 0.8-2.9; p=0.16). Among females, 11.6% with mild intellectual disability met criteria for WLD versus 5.1% of females without intellectual disability (OR 2.4; 95% CI, 0.9-6.3; p=0.058). In males, 14.6% with mild intellectual disability met criteria for WLD, compared to 12.5% of males without intellectual disability (OR 1.2; 95% CI, 0.5-2.7;

p=0.67). Conclusion: Our data indicate that children with mild intellectual disability are at least as likely to exhibit WLD as children without intellectual disability. However, our data show a trend toward increased WLD rates in females with mild intellectual disability compared to female peers without intellectual disability. Thus, children with mild intellectual disability should be evaluated for WLD and receive special educational services aimed at achieving optimal writing potential to maximize functional independence and quality of life.

Abstract 8

Is there an Association between Videogame Use and Attention and Hyperactivity Symptoms?

Anna Ocampo, MD, Eugenia Chan, MD, MPH, Division of Developmental Medicine, David Bickham, PhD, Division of Adolescent Medicine, Children's Hospital Boston, Harvard Medical School, Boston, MA

Purpose: The objective of our study is to investigate the relationship between videogame use and attention and hyperactivity (A/H) symptoms using data from a national sample. Our primary hypothesis is that increased videogame use is associated with increased A/H symptoms. Our secondary hypothesis is that increased videogame use early on is associated with A/H symptoms 5 years later. Methods: This is a secondary data analysis of the Panel Survey of Income Dynamics, a longitudinal cohort study of U.S. families. We included children ages 3 to 18 years who had complete data for 1997 and 2002. We derived duration of videogame use from parent-completed time use diaries. The primary outcome was a composite score of A/H symptoms from the Behavioral Problems Index (BPI), a parent questionnaire derived from the Child Behavior Checklist. To analyze the relationship between videogame use and BPI scores, we used bivariate analyses and multivariable regression controlling for covariates such as age, race, gender, ADHD diagnosis, television exposure, parent education, income, psychological well-being and parenting aggravation. Results: 1,556 children had complete data for both years. In 1997, average age was 7.5 years; 51% were boys. (See table for descriptive results) Our cross sectional analysis revealed no significant association between videogame use and BPI scores for 1997 or 2002. Longitudinally, the amount of weekday videogame use in 1997 was significantly associated with higher BPI scores in 2002 after controlling for gender, age, parent education, BPI score in 1997, ADHD diagnosis, television exposure and videogame use in 2002. Conclusion: Young children who play more videogames during the weekday may be more likely to present with increased A/H symptoms 5 years later.

	1997	2002
Diagnosed with ADHD	78 (5%)	124 (8%)
Videogame players	519 (33%)	738 (47%)
Weekday Videogame Use	0.6 hours	1 hour
Weekend Videogame Use	1.3 hours	1.8 hours
Mean BPI Score (5-15)	6.9	7.1

Abstract 9

Neural Correlates of Reading Disability: Implications for the use of Low Achievement, Aptitude-Achievement Discrepancy, and Response to Intervention (RTI) Models to Define Poor Readers

Fumiko Hoeft, MD, PhD, Psychiatry and Behavioral Sciences, Stanford University School of Medicine, Stanford, CA

Purpose: The three most widely used methods to identify individuals with reading disability are either solely by low reading achievement, by the discrepancy of aptitude and reading achievement, or by response to intervention (RTI). It has been shown that there are no significant differences between children identified using the first two methods in core reading-related skills and their developmental trajectories. These studies suggest that individuals with reading difficulties regardless of their aptitude would show similar neural signatures. In addition, the RTI model suggests that poor readers who do and do not respond to intervention will show different brain patterns even before they receive intervention. The purpose of the study was to examine brain activation differences in poor readers with and without low IQ, and also in poor readers who do and do not respond to intervention. Methods: Children (N=131) received functional MRI (fMRI) of phonological processing and a standard battery of neuropsychological assessment. Study 1 (N=57) included 15 poor readers with low IQ (LowIQ), 16 poor readers with typical IQ (TypIQ) and 26 typical readers. Among the 31 poor readers, 21 received intervention and 11 were considered as responders and 10 as non-responders. Study 2 (N=74) included 20 children in the LowIQ group, 18 in the TypIQ group and 36 control children. Results: In Study 1, poor readers (LowIQ and TypIQ) compared to the typical readers showed significantly reduced activation in bilateral parieto-temporal, left inferior frontal, right middle temporal and middle frontal regions, most of which are involved in phonological processing and reading. There were no significant differences in brain activation between the two groups of poor readers. Results were mostly replicated in Study 2. In addition, in Study 1 responders compared to non-responders showed greater right parieto-temporal activation, considered to be important for compensatory reading skills. Conclusion: This is the first neuroimaging study to examine the neural correlates of different classification models in poor reading children. The results provide additional evidence that aptitude does not need to be considered when identifying poor readers. Our results also support the RTI model in identifying poor readers in most need.

Abstract 10

Individual Differences in Infant Speech Perception Predict Language and Pre-Reading Skills through Age 5 Years

Gina C. Cardillo Lebedeva, BA, Patricia K. Kuhl, PhD, Institute for Learning and Brain Sciences, University of Washington, Seattle, WA

Purpose: Many children struggle in learning to read, which most often perpetuates into reading difficulty through adulthood, particularly in the absence of early intervention. Given previous literature documenting links between speech perception and pre-reading ability, this longitudinal study examined how individual differences in preverbal speech perception relate to preschool phonological awareness (PA), a documented precursor to early literacy success. Methods: A subset of a larger longitudinal project, a total of 25 children (8 girls) without known developmental or neurological concerns participated in all assessments. At ages 7 and 11 months, phonetic sensitivity was measured behaviorally by speech sound discrimination (for a native vowel contrast). Vocabulary development was examined at age 2 years via a normed parent report instrument. Phonological awareness and general language skills were measured at age 5 years using multiple standardized clinical assessment tools. Results: Results: Infant sensitivity to the vowel contrast at 7 months was positively associated with performance on phonological awareness at age 5 years ($p<.01$), while controlling for vocabulary at age 2. Importantly, cluster analyses revealed three statistically distinct subgroups of infants: those who showed comparatively low sensitivity at both 7 and 11 months, those who showed an increase in sensitivity from low to high, and those who started and remained high. After controlling for socio-economic status and general cognition, the low-low subgroup performed on average nearly one standard deviation below the other subgroups on the phonological awareness test at 5 years. On the general language tests at both 2 and 5 years however, the low-high group scored significantly higher than the low-low and the high-high groups, which were comparable to each other. Conclusion: Individual trajectories in sensitivity to native language cues within the first year of life predict both language and pre-literacy skills through age 5 years, supporting the notion that changes in early speech perception plays an important role in language acquisition. Based on these preliminary data, a working hypothesis is that the earlier an infant becomes attuned to the phonetic patterns relevant in the native language, the sooner he or she will successfully master phonological awareness.

Plenary Session 3

Monday, October 5, 2009 from 10:20 am – 11:45 am

Abstract 11

Multiple Perspectives of Children's Social Adjustment after a Sibling's Death from Cancer

Julie C. Grossenbacher, BS, Kimberly S. Miller, MS, Amanda L. Thompson, PhD, Kathryn Vannatta, PhD, Cynthia A. Gerhardt, PhD, Center for Biobehavioral Health, Nationwide Children's Hospital, Columbus, OH

Purpose: Cancer is the leading cause of death by disease for children ages 2-15, yet its impact on siblings has received little empirical attention. Within the first year of a child's death, we compared the social adjustment of bereaved siblings to peers from the perspective of multiple informants at school and in the home. Methods: Three to twelve months after a child's death from cancer ($M = 9.52$ months, $SD = 0.42$), families with a surviving child ($n = 67$) were recruited (70% participated) from three, large children's hospitals. Bereaved siblings were 8-17 years old and on average attending 6th grade. Comparison peers ($n = 67$) from the classroom were matched for age, race, and gender. The sample was 76% Caucasian and 57% female. In a school-based assessment, siblings and classmates completed the Revised Class Play (RCP) to assess behaviors, as well as measures of friendship and peer acceptance. Teachers completed the RCP and Teacher Report Form (TRF). At a subsequent home visit, bereaved siblings and comparison peers (ages 10-17) completed the Self Perception Profile for Children (SPPC) and Youth Self Report (YSR), and their parents completed the Child Behavior Checklist (CBCL). Results: Mixed models analyses with a matched pairs design revealed that teachers viewed bereaved siblings as more prosocial ($p < .05$), and bereaved siblings felt they were less victimized than peers ($p < .05$). The groups did not differ in number of best friends, reciprocated friendships, or peer acceptance ratings. Bereaved siblings had significantly lower scores on social self-concept, as well as YSR and CBCL Total Competence scores ($p <.05$). Analysis of YSR and CBCL subscales indicated small to medium effects for Social Competence and Activities. In general, child grade/age and time since death were not associated with social functioning. Conclusion: Within the first year of losing a brother or sister to cancer, bereaved siblings were similar to peers on most measures of behavior, friendship, and peer acceptance, suggesting social resilience in the school setting. However, home-based assessments suggest that children's social competence and involvement in activities may decline after a sibling's death.

Abstract 12

Love in the Time of HIV/AIDS: Adolescent Couples and Sexual Risk Behavior

Laurie J. Bauman, PhD, Ellen J. Silver, PhD, Dana Watnick, MPH MSSW, Pediatrics, Albert Einstein College of Medicine, Bronx, NY

Purpose: HIV/STD prevention with youth has focused on individual-level cognitive factors, and neglected how relationship characteristics affect condom use. Methods: We screened inner-city youth aged 14-17 from outpatient medical practices to identify those

in sexual relationships >4 weeks duration. We enrolled 139 heterosexual couples, which was 85% of those meeting eligibility criteria (age difference < 3 yrs; partner lives in same city). Teens individually completed measures on computer every 3 mos. for 1 yr. whether still in the relationship or not. Baseline data are reported here. Results: On average, boys were 1 yr older than their partners. 25% of couples were Black, 47% Latino and 27% mixed. Mean couple age was 16 mos. per boys' report and 12 mos. per girls'. Partners generally agreed about relationship characteristics: being in a serious relationship (68%), being in love (80%), that they would be together forever (future commitment, 64%) expecting monogamy (64%), mutually trusting the partner to be faithful (29%), and saying said the relationship was very/extremely important (salience, 82%). On the Sexual Relationship Power Scale couples agreed that they had equal power. 42% of couples agreed they were completely comfortable talking to each other about serious things, and on the Openness in Communication subscale, boys and girls had high levels of open communication. In a regression predicting unprotected vaginal sex, we used a Poisson model adjusting for over-dispersion. Generalized estimating equation methodology was used to account for correlation within couples. The equation controlled for couple age, respondent age, partner age difference, and gender and included being in love, salience, perceived salience to the partner, future commitment, expected monogamy, actual monogamy, trust, communication and power. Being in love (estimate=2.09,p<.005) and trusting one's partner (estimate=.66,p<.05) were significantly associated with more unprotected vaginal sex. Conclusion: Serious relationships are common and developmentally appropriate in middle adolescence, and national data suggest that teens use condoms in casual relationships. Thus, most unprotected sex among teens occurs in serious relationships. We conclude that prevention programs must focus on risk for HIV/STIs in love relationships, and address the delicate and complex challenge of recommending condom use with a trusted partner.

Abstract 13

Poor Sleep in Adolescents with Chronic Pain: Outcomes from a Trial of Online Cognitive Behavioral Therapy

Tonya M. Palermo, PhD, Anna C. Wilson, PhD, Anesthesiology & Perioperative Medicine, Elizabeth Super, MD, Pediatrics, Rachel Higginbotham, MD, Sleep Disorders Medicine, Amy S. Lewandowski, PhD, Anesthesiology & Perioperative Medicine, Oregon Health & Science University, Portland, OR

Purpose: Disrupted sleep is a challenging sequela of chronic pain in adolescents. Although identified as an important outcome, sleep is rarely incorporated into interventions or measured as a treatment outcome. We conducted a randomized controlled trial of online family cognitive-behavioral therapy (CBT) including behavioral (e.g., relaxation training), cognitive, and parent operant strategies. One lesson focused on improving sleep hygiene. We evaluated treatment effects on adolescent pain, disability, and sleep at post-treatment. Methods: Thirty-three adolescents (M=14.8 years; 70% female) with chronic headache, abdominal, or musculoskeletal pain wore an actiwatch for 7 days pre-treatment and immediately post-treatment. The online CBT group (n=17) received 8-10 weeks of online family CBT + standard care, while the wait-list control group (n=16) continued with standard care. Actigraphy, an objective sleep measure using a motion-sensing device, assessed sleep duration and sleep efficiency (percentage of time in bed spent asleep). Results: At post-treatment, on average adolescents had insufficient sleep duration (M=6 hrs 57 min, SD=52 min) and low sleep efficiency (M=84.8%, SD=4.8). ANCOVAs controlling for pre-treatment values were conducted on the primary treatment outcomes of pain, disability, and sleep. Analyses indicated significant group differences on disability (p=.04) and pain (p=.05) at post-treatment showing improvement for adolescents receiving online CBT in comparison to the control condition. However, despite changes in pain and disability, there were no significant group effects from pre- to post-treatment on sleep outcomes. In regression analyses controlling for treatment group, sleep efficiency was a significant predictor of disability outcome scores (p=.03) but not of pain scores. Conclusion: In sum, while the CBT intervention produced positive effects on pain and disability, it did not improve sleep outcomes in adolescents with chronic pain. Given the significant sleep disturbances experienced by these adolescents and their relationship to disability, there is a clear need to develop and test more intensive sleep interventions in this population.

Abstract 14

Impact of Self-Concept on Readiness for Change in a Pediatric Obese Population

Andres Mendez, BA, Kanchana De Silva, BA, Psychology, Loma Linda University, San Bernardino, CA, Vidhya Krishnamurthy, PhD, Pediatrics, Loma Linda University Children's Hospital, San Bernardino, CA, Danusia Nedilskyj, MA, Psychology, Loma Linda University, San Bernardino, CA, Kim Hamai, MD, Kiti Freier Randall, PhD, Pediatrics, Loma Linda University Children's Hospital, San Bernardino, CA

Purpose: Pediatric obesity is a national epidemic. The increase in the rates of obesity has led to the need for the development of multidisciplinary pediatric obesity intervention programs. With the crucial addition of behavioral health professionals in these intervention programs, focus has turned to examining lifestyle and psychosocial factors related to weight gain and program benefit. Motivation to change is noted to be a key factor that determines program adherence, and this factor is noted to be impacted by various psychosocial factors, including self-concept. The current study examines the potential relationship between self-concept and motivation to change. Methods: 144 children (BMI > 85%ile, mean age = 12.56, SD = 1.90; 71 males, 73 females) participating in a 12-week obesity program were included. Participants completed an intake assessment including an evaluation of self-concept, (Piers-Harris Self Concept Scale-2nd Edition),and motivation for change, the Readiness for Change Questionnaire (RFC) (developed by the program/based on constructs of the URI Change Assessment scale). Four domains of self-concept- the Intellectual and School Status, Physical Appearance and Attributes, Popularity, and Happiness and Satisfaction- were utilized in this study. The RFC consists of two factors, cognitive and emotional readiness for change. Results: Hierarchical regression analyses demonstrated that self-con-

cept variables significantly predict cognitive (F (5, 137) = 3.175, p = .01, R2 = 0.102) and emotional (F (5, 136) = 5.558, p < .01, R2 = 0.169) readiness for change after controlling for gender. More specifically, a child's self-concept of intellectual and school status significantly predicted cognitive readiness for change (t = 1.963, p = .05) while popularity significantly predicted emotional readiness for change (t = 3.03, p <.01).In addition, overall self-concept significantly predicted total readiness for change (F (2, 139) = 21.895, p < .01) after controlling for gender. Conclusion: These results indicate that self-concept can greatly contribute to children's cognitive and emotional readiness for change, which in turn can affect their outcome in a pediatric weight management program. To be maximally effective, interventions must address children's self concept as well as their cognitive and emotional readiness for change.

Abstract 15

Autism Spectrum Disorders and Health Care Expenditures: the Impact of Co-morbidities

Georgina Peacock, MD, Djesika Amendah, PhD, NCBDDD, Centers for Disease Control and Prevention, Atlanta, GA

Purpose: Autism Spectrum Disorders (ASD) are associated with many co-occurring conditions, among them intellectual disability (ID), problems with attention and hyperactivity, epilepsy and seizures. Although many studies calculate mean medical expenditures of children with ASD, few investigated how the different comorbidities affect them. The objective of this study is to provide estimates of the medical expenditures of publicly insured children and adolescents with ASD in the United States and to describe how specific co-morbidities impact those costs. Methods: We used MarketScan Medicaid data from four states and selected individuals with Autism Spectrum Disorders related claims in the years 2003-2005. We restricted our sample to individuals age 17 or less who had 330 days of coverage in Medicaid in 2005. We identified children with the specific co-morbidities as well. We then computed their medical expenditures, as the sum of inpatient, outpatient and drug claims expenditures stratified by comorbidities. In addition, we determined how each co-morbidity impacted the cost. Results: We identified a sample of 9,388 individuals with ASD out of 2,256,234 persons enrolled for the year 2005 who were aged 17 or below. This yields an administrative prevalence of 41.6 per 10,000 which is similar to population prevalence based on medical records only. Average total expenditure per child age 2 to 17 is US$16,770 compared to US$ 1,630 for controls. On average, 20% of children age 8 to 17 have a diagnosis of intellectual disability and the total expenditures of children with ID is 2.6 times those of children without. Conclusion: Further analysis will investigate problems with attention and hyperactivity of the childhood and adolescence, epilepsy and seizure. Information on which co-morbidities substantially increase medical expenditures can be used both to raise awareness and focus secondary prevention efforts when possible.

Poster Board Assignments

Board No.	Abstract No.	Abstract Title	First Author
1	16	Development of Children Born Prematurely: Advantage of Beginning Early Intervention in the First Year of Life	Anne DeBattista, MSN, PNP
2	17	Missed Opportunity for Developmental Support During Hospitalization: A View from a Developing Country	Emine Bahar Bingoler Pekcici
3	18	Structural Barriers to Early Intervention Services for Foster Children in Massachusetts	Laurel Leslie, MD, MPH
4	19	The Persistence of Sleep Disturbance in Children Evaluated for Autism Spectrum Disorders: Predictive Factors and the Impact of Co-Occurring Diagnoses	Celeste Flachsbart, MA
5	20	Complementary and Alternative Medicine Use in Children with Cerebral Palsy	Laura Weissman, MD
6	21	The Changing Landscape for International Adoption and Its Impact on U.S. Families	Joel Shulkin, MD, MPH
7	22	Intersections Between Risk Perception and Health Risk Behavior Among Adolescents: The Adolescent Invincibility Tool	Heather Hunter, MA
8	23	The Parent-Child Collaborative Decision Making Instrument	Victoria Miller, PhD
9	24	The Utility of Universal Developmental Screening	Elizabeth Hansen, MD
10	25	The Effect of Retinopathy of Prematurity on the Academic Outcome of Very Low Birth Weight Children at Age 12 in Mainstream Schools in Singapore	Mary Daniel, M Medicine (Pediatrics)
11	26	Effects of Pediatric Cancer on Friendship Homophily and Social Acceptance	Jennifer Waller, BA
12	27	Revision of a Parent-Completed Developmental Screening Questionnaire: Ages and Stages 3rd Edition	Jane Squires, PhD
13	28	Developmental Screening in China: Use of a Parent-Completed Screening Test	Xiaoyan Bian, MD
14	29	A Training Model for the Diagnosis of Autism in Community Pediatric Practice	Zachary Warren, PhD
15	30	Comparison of Ages and Stages (ASQ) and the Fluharty in a Low Income Population	David Childers, Jr., MD
16	31	Socio-emotional Development after Extreme Prematurity in Children without Cognitive or Motor Disability	Lauren Boyd, MD
17	32	Does Autoimmune Disease in Mothers with the Premutation of Fragile X Increase Risk of Autism Spectrum Disorders in Children?	Weerasak Chonchaiya, MD
18	33	Computerized Working Memory Training with Survivors of Childhood Cancer	Kristina Hardy, PhD
19	34	Adolescent Suicidality in Males and Females: A Longitudinal Investigation of Suicide Risk Predictors	Samantha Huestis, MA
20	35	Retrospective Case Studies on Childhood Disintegrative Disorder: A Report of the Diagnostic Features and Treatment Methods	Kendra Homan, MA
21	36	Further Validation of the Pediatric Symptom Checklist with a Chronically Ill Pediatric Population	Alexis Suozzi, MA
22	37	Can Minocycline be a Targeted Treatment of Fragile X Syndrome?	Agustini Utari, MD
23	38	Child Rearing Practices of Parents of Children with Cancer and Parents of Comparison Children: Perspectives of Parents and Professionals	Lauren Feierstein
24	39	“My IBD Book” : A brief drawing intervention for children hospitalized with Inflammatory Bowel Disease	Gary Maslow, MD

Poster Board Assignments

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26	41	The Role of Parenting Capacity Variables and Health-Related Quality of Life in Pediatric Cancer	Stephanie Hullmann, MD
27	42	Psychological Distress in the Pediatric Obese Population	Vidhya Krishnamurthy, PhD
28	43	Assessing Parent Interest in a Spanish-Language Parenting Intervention Offered in a Primary Care Clinic.	Lisa Ramirez, MA
29	44	Written-Language Disorder (WLD) without, or with, Reading Disorder (RD) A Population-Based Birth Cohort Study	Slavic Katusic, MD
39	45	Parents' Perceptions of Pharmacological and Non-pharmacological Techniques for Pain Control in Children	Ayala Gorodzinsky, BSc
31	46	Cancer-Related Stressors and Emotional Adjustment in Children with Cancer	Erin Rodriguez, MS
32	47	Verbal Working Memory and Sentence Comprehension in Preterm Children 9-16 Years Old	Eliana Lee, BS
33	48	Neurodevelopmental Impact of Congenital Heart Defects in Down Syndrome	Jeannie Visootsak, MD
34	49	Frequency of Cytogenetic Abnormalities in Children with Attention-deficit Hyperactivity Disorder Exposed to Extended-release Methylphenidate	Rafael Muniz, MD
35	50	Obesity in Children and Adolescents with Chronic Pain: Associations with Pain and Activity Limitations	Anna Wilson, PhD
36	51	Developmental and Behavioral Abnormalities of Children with FXS Gray Zone Alleles	Rebecca Kronk, PhD
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39	54	Family Burden Associated with Academic and Behavioral Problems in Childhood Cancer Survivors	Melissa Cousino, BA
40	55	Do Mother-infant Verbal Interactions Related to 6 Month TV Exposure Mitigate Adverse Impacts on 14 Month Development?	Alan Mendelsohn, MD
41	56	Infant Media Exposure: Adverse Effects on Toddler Development	Suzy Tomopoulos, MD
42	57	Shared Reading Among At-Risk, Latina Mother-Child Dyads: Trajectories from Postpartum to 24 Months	Samantha Berkule, PhD
43	58	Characteristics of Children with ADHD and High IQ: Results from a Population-Based Birth Cohort	Maja Katusic, MD
44	59	Pediatric Nurses' Perceptions of Optimal Pain Management Across Departments	Susan Heinze, BA
45	60	Failure to Thrive (FTT) and Long Term Cognitive Outcome in Children with Prenatal Cocaine Exposure.	Gisela Porras, MD
46	61	Effects of Guanfacine Extended Release on Disruptive Behavior, Parental Stress, and Global Improvement in Children With Attention-Deficit/Hyperactivity Disorder and Oppositional Symptoms	Frank López, MD
47	62	Psychiatric Disorders (PD) in Mothers of Children with Attention-Deficit/Hyperactivity Disorder (ADHD): A Population-Based Study	Kendra Homan, MS
48	63	Developmental and Behavioral Co-Morbidities and Prescribing Practices for Children in a Preschool Developmental Evaluation Center	Mary Leppert, MD

Poster Board Assignments

Board No.	Abstract No.	Abstract Title	First Author
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50	65	Evaluating Developmental Screening Using the PEDS and M-CHAT	Jennifer Poon, MD
51	66	Children with Type I Diabetes: Family Environment and it's Relationship to Socially Desirable Responses on Measures of Anxiety	Jamie Pivonka-Jones, PhD
52	67	Clinical Correlation of the Neurodevelopmental Risk Examination and the Cognitive Adaptive Test/Clinical Linguistic and Auditory Milestone Scale (CAT/CLAMS) scores in Extremely Low Birth Weight (500-750g) and Very Low Birth Weight (750-1000g) Infants at 12 months and 24 months.	Helen Papaioannou, MD
53	68	Comparing the Ethnic Identity of Students who Pass and Do Not Pass the State Standardized Academic Assessment	Adiaha Spinks-Franklin, MD, MPH
54	69	Managing Children with Attention Deficit Hyperactivity Disorder and Dysfunctions of Sensory Processing	Lee Williames, MD
55	70	Predicting Medical Adherence in Pediatric Cystic Fibrosis Patients Using the Health Belief Model	Nicole Wightman, BA
56	71	Initial Validation of a New Measure of Facial Expression Recognition: Survivors of Childhood Cancer Compared to Typically Developing Children	Melanie Bonner, PhD
57	72	The Association of Parenting Capacity Variables to Depression and Anxiety in Children with Cancer	David Fedele, MS
58	73	Psychosocial Functioning in Children with Neurofibromatosis Type I	Taryn Allen, MA
59	74	Collaborative Care Model: Exploring the Relationship between Co-Location of Behavioral Health Services within Pediatric Primary Care and Pediatric Outcomes	Traci Lien, MD, MS
60	75	Predicting Maternal Distress over One Year of Treatment for Childhood Cancer	Julie Grossenbacher, BS
61	76	The Influence of Internalizing Symptoms on Longitudinal Medication Adherence Among Pediatric Renal and Liver Transplant Recipients	Brandon Aylward, MA
62	77	Attributions of Responsibility for Daily Medication Adherence in Children with Asthma	Carrah James, PhD
63	78	Positive Outcomes in Siblings of Children with Developmental Disabilities and Chronic Illnesses	Gray M Buchanan, PhD
64	79	Sibling Support of Pediatric Diabetes Management: Relations to Adherence, Glycemic Control, and Quality of Life	Wendy Plante, PhD
65	80	Healthcare Needs of Children with Down Syndrome and the Impact of Health System Performance on Families	Randall Phelps, MD, PhD
66	81	How Do Parents Make Decisions About Analgesic Use? Examining the Impact of Child Age and Parent Gender in a Community Sample	Jessica Joseph, MS
67	82	How Do Teachers Work with Parents and Clinicians about Urban Children with ADHD?	Michael Ching, MD, MPH
68	83	Healing Touch Shows Potential Stress Mitigation in Ill Neonates	Sharon McDonough-Means, MD
69	84	Observed Father Negativity and Positivity and Child Externalizing Problems: SES and Ethnicity as Moderators	Marshaun Glover, MS
70	85	Informant Discrepancy in Cystic Fibrosis: Comparison between Child, Parent and Physician Report	Heather Babyar, BA

Poster Board Assignments

Board No.	Abstract No.	Abstract Title	First Author
71	86	An Open-Label Pilot Study of Transdermal Methylphenidate in Children With Autism Spectrum Disorders, Inattention, Hyperactivity, and Impulsivity.	Thomas Lock, MD
72	87	Miscarried Helping in Families of Youth with Diabetes: When Helping Hurts	Michael Harris, PhD
73	88	Making a Case for House Calls for Families of Youth with Poorly Controlled Diabetes	Michael Harris, PhD
74	89	Does Intensive Treatment Lead to Better Results in Toddlers with Autism Spectrum Disorders (ASD)?	Roula Choueiri, MD
75	90	Universal Teacher Screening for ADHD Risk: Exploring Potential Utility	Raymond Sturner, MD
76	91	Does Pediatric Patient-Centeredness Affect Family Trust?	Stephen Aragon, PhD, MHA
77	92	Somatic Growth Velocity and Cognitive Functioning in Young Children with Sickle Cell Disease	Eve Puffer, PhD

Poster Session Abstracts

Concurrent Session 6
Poster Symposium: Developmental Disabilities in Early Childhood: From Early Detection to Treatment Decisions

Abstracts 16 – 20
Please see page 115, in the handout section.

Poster Session I
Sunday, October 4, 2009 from 6:00pm – 7:00pm

Abstract 21
The Changing Landscape for International Adoption and Its Impact on U.S. Families
Joel M. Shulkin, MD, MPH, Eugenia Chan, MD, MPH, Nora Mueller, MAA, Lisa Albers Prock, MD, MPH, Developmental Medicine, Children's Hospital Boston, Boston, MA

Purpose: International adoption was increasingly popular through 2006, but the number of children adopted from abroad declined dramatically in 2008. At the same time, both implementation of the Hague Convention on Adoption in the U.S. and new restrictions by several major sending countries occurred. Parents who may have previously chosen international adoption are now forced to consider a different range of options for expanding their family. To the best of our knowledge, this is the first study to analyze the impact of the Hague Convention and the changing policies of sending countries on U.S. families seeking to adopt. Methods: This was a qualitative study of 8 prospective and 14 adoptive parents in the greater Boston area who completed a home study for an international adoption between 2006 and 2009. We conducted in-depth qualitative interviews to elicit the experiences of parents during their adoption process and factors that impacted their decision-making. We used open coding and thematic analysis to investigate relationships among themes. In order to triangulate our parent interviews, we interviewed adoption experts and agencies for supplemental information about adoption trends. Results: We interviewed 22 parents, 6 experts, and 3 agency representatives. Parents based country choice on processing speed, affinity for the culture, and perception of child health. Common obstacles to adoption included bureaucracy and redundant paperwork, rule changes mid-process, agency turnover, inconsistent inter-agency standards, and ineffective communication from agencies. Many families were willing to consider children with special needs but felt unprepared due to insufficient preparation time and resources. Families were more likely to wait for the current adoption if they already had children, had already invested substantial time and money, felt affinity for the country's culture, or felt they were ineligible for other options. More than half our participants would recommend international adoption. Conclusion: Families described increased bureaucracy following implementation of the Hague Convention, limited choices due to new restrictions by birth countries, and continued agency variability. For parents, the decision to wait or explore other options was shaped by their previous parenting experience, cultural affinity, and investment in international adoption.

Abstract 22
Intersections Between Risk Perception and Health Risk Behavior Among Adolescents: The Adolescent Invincibility Tool
Heather L. Hunter, MA, Selby M. Conrad, MA/MS, Bradley Hasbro Children's Research Center, Brown University, Providence, RI

Purpose: Health risk behaviors represent an area of significant health concern for adolescents. Measures capable of distinguishing between teens likely to participate in risky activities versus those likely to engage in protective health behaviors have the potential to aid providers in identifying at-risk teens and subsequently preventing negative health consequences. The current project aimed to explore the factor structure and predictive validity of a new measure of adolescent risk perception. Methods: Participants (215 adolescents, mean age=16.2, 61% male, 44% European American) completed the Adolescent Invincibility Tool, a questionnaire designed to assess risk perception, and the Youth Risk Behavior Survey, a measure of recent health risk behavior. Results: Principal Component Analysis yielded a four-factor solution of the AIT: Thrill Seeking (i.e., enjoyment from taking risks), Invulnerability (i.e., perceived susceptibility to harm), Nonconformity (i.e., desire for independence/individuality) and Perceived Control (i.e., beliefs regarding ability to manage consequences of risk). Regression analyses indicated that, after controlling for demographic characteristics, risk perception predicted a significant proportion of the variance in substance use and risky sexual behavior. However, gender was the only significant predictor of obesity risk. Conclusion: Results suggest that the AIT is comprised of four factors, corresponding to discrete aspects of risk perception, with utility in predicting particular forms of health risk behavior. Associations between types of risk perception and health behavior were complex, suggesting that simplistic measurement of risk perception is not appropriate. Findings support a model that categorizes perception into specific factors, rather than use of a global measure. Study findings also suggest that the AIT may be a viable new measure for identifying adolescents at risk for negative health outcomes. Future research should continue to delineate associations between particular aspects of risk perception and risk behavior, explore potential mediating variables, and identify protective factors.

Abstract 23

The Parent-Child Collaborative Decision Making Instrument

Victoria A. Miller, PhD, Center for Research Integrity, The Children's Hospital of Philadelphia, Philadelphia, PA

Purpose: Parent-child collaborative decision making (CDM) has been identified as a potentially important precursor to full decision making independence. The primary aim of this study was to develop a measure of CDM for the management of childhood chronic illness. Preliminary analyses of the first 100 participants are presented here. Methods: Participants included youth (8-19 years) with type 1 diabetes, cystic fibrosis, or asthma and their parents. Items for the Collaborative Decision Making Instrument (CDMI) were generated from a literature review and qualitative study. Participants also completed measures of child behavioral functioning, parent autonomy support, and family communication. Results: A principal components analysis of the Parent Version of the CDMI yielded an 18-item, 5-factor scale, explaining 67% of the variance in the correlation matrix. Communalities were in the moderate to high range (.51-.82); alphas ranged from .60 to .84. Item-subscale correlations ranged from .61 to .89. Older child age was associated with lower Parent Express Information/Opinion ($r = -.28$, $p < .01$) and higher Child Express Information/Opinion ($r = .20$, $p = .05$). More child attention problems were associated with higher Parent Express Information/Opinion ($r = .27$, $p < .01$). More child depressive symptoms were associated with lower Child Seek Information/Opinion ($r = -.21$, $p < .05$). Higher positive family communication was associated with higher Child Seek Information/Opinion ($r = .20$, $p < .05$ and $r = .28$, $p < .04$). Analyses suggested that aspects of CDM are associated with treatment adherence and adolescent decision-making competence. Preliminary testing of the Child Version of the CDMI was also promising. Conclusion: These findings suggest that the CDMI has a robust factor structure, adequate psychometric properties, and preliminary construct validity. Various child- and family-level variables were associated with CDM. The final version of the instrument will be used in longitudinal research to inform questions about developmental mechanisms underlying changes in CDM, predictors and outcomes of CDM, and how health care providers can facilitate the transition to independence for chronic illness management.

Abstract 24

The Utility of Universal Developmental Screening

Elizabeth R. Hansen, MD, Pediatrics, Gundersen Lutheran, Onalaska, WI, Susan Berger, PhD, Ben Kaye, MD, Garry Gardner, MD, Pediatrics, Northwestern University, Chicago, IL

Purpose: To explore the clinical utility of formal developmental screening at 9 & 18 month well child visits & describe Early Intervention (EI) referral patterns using screening tools or developmental surveillance (DS). Methods: Convenience sample from 2 pediatric offices. Office 1(O1) uses the PEDS. Office 2 (O2) uses the ASQ. Retrospective chart review from 9-18 months. Results: In total, 117 charts reviewed in O1; 106 reviewed in O2. O1: 76 (65%) completed PEDS at 9 months. 22 screens (29%) were positive. No subjects with positive screens referred to EI at 9 months. By 18 months, 6 w/positive 9-month screens were referred (9-month screen false positive rate=73%). At 18 months only 32% (n=34) of charts had completed screens. 20 (59%) were positive; 5 referred to EI (75% false positive). 100% of referrals identified by DS also. O2: 54 (51%) completed ASQs at 9 months. 3 screens(6%) were positive. No subjects with a positive screen referred to EI by 18 months. At 18 months, only 5% (n=6) of charts had completed screens. 3 screens (50%) were positive. None were referred to EI (100% screening false positive). Five(5%) children referred to EI through DS by 18 months. In total, 15% of the sample in O1 and 14% of the sample in O2 were referred to EI by 18 months. Conclusion: Screens not completed consistently. Even when screening results are available, pediatricians use clinical judgment more often to make EI referrals. Referral at 9 months is rare. Screening identifies more children for EI referral than DS but has very high false positive rates. When children identified by DS are combined with those who have known concerns (e.g. prematurity), EI referral rates in both offices match expected percentages of children with developmental concerns in the general population.

Abstract 25

The Effect of Retinopathy of Prematurity on the Academic Outcome of Very Low Birth Weight Children at Age 12 in Mainstream Schools in Singapore

Mary L. Daniel, M Medicine (Pediatrics), Dept of Neonatology, Sok Bee Lim, M Medicine (Pediatrics), Dept of Child Development, KK Women's and Children's Hospital, Singapore

Purpose: To determine the effect of Stage 1-3 Retinopathy of Prematurity (ROP) on the results of a state examination at age 12, in children born with very low birth weight (VLBW) of less than 1500g, who had pursued a mainstream curriculum. Methods: Parents of VLBW infants born between 1990 and 1992 were interviewed by telephone for the results of the Primary School Leaving Examination, a state examination for all mainstream students at age 12. ROP data were obtained prospectively. 4 groups were analysed: group 1-no ROP, group 2-ROP of any grade, Group 3-no ROP/stage 1-2 ROP, Group 4 stage 3 ROP. 4 subjects were analysed: English Language, Mathematics, Science and a second language, as well as the total examination score. Results were analysed by student's t-test and Fisher's exact test, using SPSS version 14. Children with severe visual impairment or other neurodevelopmental disabilities who were in special schools were not part of this study cohort. All children were screened for myopia at 7 and 12 years. Results: ROP status and full examination results were known in 84 (82.4%) of 102 children pursuing a mainstream curriculum. Mean birth weight and gestation were 1127.0 ± 222.0g and 30.2 ± 2.9 weeks respectively. 21(25%) had ROP (6-stage 3, 11-stage 2, 4-stage 1). The mean WISC-III score of this cohort at age 8 was 100.4 ± 11.8. There were no significant differences in the WISC-III scores between groups 1 and 2, and between groups 3 and 4. Between groups 1 and 2, there were no significant differences between the means of the total

scores or the percentages of children who scored >50% or 75% of the total marks in each of the 4 subjects. 5 of 6 children in group 4 failed Mathematics compared to 31% of those in group 3(p=0.017). There were no differences between groups 3 and 4 in the total examination scores or in the marks obtained for the other subjects. Conclusion: Children with Stage 3 ROP may have an increased risk of difficulty in Mathematics. There were no effects of ROP on language and science or in total examination scores.

Abstract 26

Effects of Pediatric Cancer on Friendship Homophily and Social Acceptance

Jennifer M. Waller, BA, Anna E. Craig, MS, Psychology, University of Pittsburgh, Pittsburgh, PA, William Bukowski, PhD, Jennifer Reiter-Purtill, PhD, Behavioral Medicine and Clinical Psychology, Cincinnati Children's Hospital Medical Center, Cincinnati, OH, Robert B. Noll, PhD, Pediatrics, Psychiatry, and Psychology, University of Pittsburgh, Pittsburgh, PA, Cynthia A. Gerhardt, PhD, Kathryn Vannatta, PhD, Pediatrics and Psychology, Ohio State University, Columbus, OH

Purpose: Children with cancer may be at risk for problems with peers as a result of physical symptoms or treatments related to their condition (e.g., missed school, lack of participation in extracurricular activities, fatigue). Children generally associate with peers who have similar social characteristics (e.g., aggressive children befriend other aggressive children). By interrupting participation in social activities, cancer may disrupt typical patterns of friendship. This study was designed to examine differences in peer affiliation patterns and social acceptance between children with cancer and non-chronically ill, behaviorally similar peers. We expected that the friendships of children with cancer would be less homophilious with regard to social behavior and social reputation, relative to the friendships of non-chronically ill children, and that children with cancer would be less socially accepted. Methods: Children with cancer (N= 99) ages 8-15, undergoing chemotherapy for a non-primary central nervous system malignancy, were identified from medical records at a large, Midwestern medical center. For each of these children, data were collected in their classroom from peers (N= 2,302) using widely used measures of social reputation, friendship, and likability. Non-chronically ill comparison peers were classmates of children with cancer, matched on race, gender, behavioral reputation, and age. Results: Friendship similarity was generally equivalent across groups (cancer and comparisons), regardless of sex or age, with one exception: children with cancer were more similar to their friends with respect to sensitive-isolated social behavior, relative to comparisons. Although children with cancer and comparisons were similarly well-liked by peers, children with cancer received fewer friend nominations and had fewer mutual friendships. Together, these findings lend empirical support to a sentiment often expressed by children regarding cancer's impact on friendship: "I found out who my real friends are," meaning that children lose some of their more distal friends and grow closer to the friends that 'stick with them' during the course of their illness. Conclusion: Cancer may be particularly disruptive to less homophilious friendships. Given the long-term consequences of problematic peer relations, maintaining children's social ties during treatment could be a fertile area of focus for clinical care of children with cancer.

Abstract 27

Revision of a Parent-Completed Developmental Screening Questionnaire: Ages and Stages 3rd Edition

Jane Squires, PhD, Early Intervention/Special Education, University of Oregon, Eugene, OR, Robert E. Nickel, MD, Pediatrics, Oregon Health & Science University, Eugene, OR, Elizabeth Twombly, MS, Early Intervention/Center on Human Development, University of Oregon, Eugene, OR

Purpose: Collecting a broad and diverse standardization sample and conducting psychometric studies on the Ages & Stages Questionnaires, 3rd edition (ASQ-3), were overall study goals. 18,000 questionnaires were collected in order to determine new screening cutoff scores and study validity and reliability. Methods: First, the ASQ-2 was revised, including development of two additional questionnaire intervals (i.e.. 2 and 9 month). Minor modifications were made to the existing questionnaires, such as revising wording for improved clarity and adding examples for broader cultural acceptability. Second, parents completed the revised ASQ-3, using both traditional paper/pencil and on-line formats. Third, an additional sample of parents/children was recruited for validity and reliability studies. Results: A sample of 18572 questionnaires was gathered on children between the ages of 1 to 66 months; 9733 paper questionnaires were collected as well as 8839 web-completed questionnaires. Concurrent validity, measured by comparing the classification of children based on their performance on a standardized test or eligibility assessment with their classification based on their performance on ASQ, ranged from .76 to 1.00 across intervals. Sensitivity overall was .86 and specificity .86. Reliability findings included coefficient alpha ranging from .51-.87; interrater reliability agreement between parents and professionals was .93 on questionnaire classifications (i.e., risk/typical) and test-retest reliability based on questionnaire classifications was .92. Conclusion: Data on the ASQ-3 (Squires & Bricker, 2009) suggest a valid and reliable questionnaire system, with an overall normative sample of 15,000 children representing all 50 US states. Because of its strong psychometric base as well as flexibility and cost effectiveness, the ASQ-3 should continue to be a viable, standardized developmental screening measure to assist in early identification efforts. Future validity and reliability studies with diverse populations are needed to improve the psychometric base.

Abstract 28

Developmental Screening in China: Use of a Parent-Completed Screening Test

Xiaoyan Bian, MD, Pediatrics, Shanghai Child Health Care Institute, Shanghai, China, Jane Squires, PhD, Ching-i Chen, MS, Early Intervention/Center on Human Development, University of Oregon, Eugene, OR

Purpose: As part of an effort to improve the outcomes of individuals with disabilities, the Shanghai government has launched a campaign to screen at least 95% of newborns. To meet this goal, the Ages & Stages Questionnaires (ASQ) was translated into Chinese and used in pediatric community healthy care centers in Shanghai. Screening cutoff scores were determined and reliability, validity, and utility were studied. Methods: The Ages and Stages Questionnaire system was translated into standard Simplified Chinese by developmental and language experts, back translated into English, and revised after field testing. The Ages & Stages Questionnaires-Chinese (ASQ-C) was then given to over 8000 children from 3 to 60 months of age when they came for their pediatric well child visits. Third, a random sample of 483 children/caregivers was asked to participate in convergent validity and reliability studies, using the Bayley Scales of Infant Development, 2nd Edition, and the Denver-II, Chinese version. Results: Cutoff points were established for the ASQ-C, using a 2 SD cutoff score by domain across questionnaires. Inter rater agreement between ASQ-C completed by 112 caregivers and a professional assessor was .94. Test-retest reliability for 175 caregivers who completed 2 ASQ-C at a one-month interval was .94. Cronbach's coeffienct alpha ranged from .37-79. Convergent validity, measuring agreement with BSID-II and Denver II outcome classifications (i.e., risk, typical) and ASQ-C outcomes (i.e., risk, typical), ranged from .57 to .94. Utility surveys indicated pediatric providers felt they learned about typical development when helping parents/caregivers complete the ASQ-C and that the model of completing the ASQ-C together with families worked well. Additionally, parents/caregivers felt that the completion of ASQ-C was valuable and they were excited to do related play activities at home. Conclusion: The ASQ-C was translated with cultural appropriateness in mind and functioned as a valid and reliable caregiver-completed screening test in this pilot evaluation in Shanghai. A larger and more diverse Chinese sample from other cities and rural areas is needed to further confirm these results. Low cost prevention and intervention activities will also be developed to improve the skills of the young children in China with developmental concerns and delays.

Abstract 29

A Training Model for the Diagnosis of Autism in Community Pediatric Practice

Zachary Warren, PhD, Vanderbilt Kennedy Center, Vanderbilt University, Nashville, TN, Quentin Humberd, MD, Exceptional Family Member Program, Blanchfield Army Community Hospital, Ft. Campbell, KY, Wendy Stone, PhD, Vanderbilt Kennedy Center, Vanderbilt University, Nashville, TN

Purpose: Early screening and diagnosis of autism spectrum disorders (ASD) currently represents a critical public health and clinical practice issue. Historically, waits for diagnostic services are quite lengthy and hinder the start of early intervention services thought to be crucial for optimizing functional developmental outcomes for children and their families. In this study we attempted to develop a training program designed to help pediatricians identify and diagnose young children with ASD in the context of traditional community practice settings with a very time-limited framework. Methods: 5 community pediatricians participated in an intensive training (i.e., use of MCHAT, Screening Tool for Autism in Two-year-olds (STAT), and brief diagnostic interview), conducted specialized 1-hour ASD diagnostic evaluations within their own practices, and then referred a consecutive series of children to a traditional medical center diagnostic clinic for an independent assessment of ASD. Results: Of the 5 community physicians attending the training, 4 referred patients for subsequent independent evaluation. 21 of 25 referrals completed the independent evaluation process (child age M = 30.48, SD = 3.74). An ASD diagnosis was confirmed based on independent evaluation in 14 out of 19 cases (74%). Of the 2 children (10%) referred without an ASD-risk classification, one child received a diagnosis of ASD subsequent to independent evaluation and one did not (50% agreement). Overall independent diagnostic evaluation was in agreement with initial pediatrician classification in 15 out of 21 cases (71%). Agreement varied greatly between the four referring pediatricians: 1/1 = 100%; 6/7 = 86%; 4/6 = 67%; 4/7 = 57%. Conclusion: The development of training methods for the classification of ASD within traditional community based pediatric practice holds promise. Specifically, introduction of basic interactive screening tools into a pediatric consultative model may be able to successfully classify young children in a timely fashion to appropriate categories of risk. Such models must take into account the reality that significant revision and condensation of gold-standard assessment methodologies will undoubtedly contribute to more errors in definitive classification.

Abstract 30

Comparison of Ages and Stages (ASQ) and the Fluharty in a Low Income Population

David O. Childers, Jr., MD, Pediatrics, Univ of Florida College of Medicine, Jacksonville, Jacksonville, FL, Francine Marabell, RN, Preschool Screening, Jacksonville Children's Commission, Jacksonville, FL, Katryne Lukens-Bull, MPH, Vivek Kumar, MBBS, David Wood, MD, Pediatrics, Univ of Florida College of Medicine, Jacksonville, Jacksonville, FL

Purpose: Evaluate sensitivity and specificity of the Ages and Stages Questionnaire (ASQ) in identifying language delay among 3-5yo children in subsidized daycare (<150% federal poverty line), with the Fluharty as the gold standard. Methods: Data was collected from Oct 2004 to June 2005 from the 14 quality centers in Duval County, FL. Centers served mainly low-income children and were willing to participate in a quality improvement program. 570 children ages 3-5yo were indentified at the centers. 70% of parents re-

turned consent forms, including 102 children in subsidized child care and 200 not in subsidized programs (55% <165% federal poverty line). 76% of participants received both ASQ (completed by childcare provider or parent) and the Fluharty Speech Assessment (completed by Speech Pathologist). Data was analyzed to determine the sensitivity/specificity of the ASQ to identify speech delays in this low income population. Results: Among the 302 children (48.3% male, 43.8% white, 55.3% low income), 37.1% failed the Fluharty while only 26.8% failed the ASQ. 71 children (23.5%)passed the ASQ but failed the Fluharty. 50% of children passed both assessments. Children were more likely to pass both assessments if they were not Black, not in subsidized childcare, not low income, and had health insurance. In specific areas of the ASQ relating to speech delays, 92 children (61%) passed ASQ specific speech and language screenings but failed the Fluharty. Overall sensitivity of the ASQ was 51% for all children and 46% for children in subsidized day care. The specificity of the ASQ was 68% for all children and 69% for children in subsidized day care. Conclusion: In a mainly poor inner city preschool cohort, sensitivity of ASQ was low. The Fluharty (completed by a SL/P) is a more sensitive for speech delays in this group. Screening tests can't be too sensitive, but the ASQ may miss too many milder language delays which are associated with risk of reading problems and school failure. Costs of implementing the Fluharty must be weighed against the long-term societal benefits of early detection of speech/language delays and early reading supports in this population.

Abstract 31

Socio-emotional Development after Extreme Prematurity in Children without Cognitive or Motor Disability

Lauren A. Boyd, MD, Michael E. Msall, MD, Pediatrics, University of Chicago, Chicago, IL, T. Michael O'Shea, MD, Pediatrics, Wake Forest University School of Medicine, Winston-Salem, NC, Elizabeth N. Allred, MS, Alan Leviton, MD, Neurology, Harvard Medical School, Boston, MA

Purpose: To determine if children born after extreme prematurity who have normal cognitive and motor development experience delays in socio-emotional regulation. Methods: The ELGAN study enrolled 1506 babies born before the 28th postmenstrual week at 14 US centers during 2002-2004 and collected maternal and neonatal data, protocol cranial ultrasounds and developmental follow-up. Of 1200 survivors at age 2 years, 904 were assessed with the Bayley Behavioral Rating Scale (BRS). A neurological examination, the Bayley Scales of Infant Development, 2nd edition Mental Development Index (MDI) and Psychomotor Development index (PDI), the Child Behavior Checklist and the Modified Checklist for Autism in Toddlers were also completed. Results: Among children with normal MDI and PDI (>=70), those with MDI or PDI 70-84 were about twice as likely to have abnormal scores on the BRS, as compared to those with MDI or PDI above 84 (Table). Conclusion: Abnormal BRS scores are associated with developmental delays identified with the MDI and PDI. However, even among infants without such delays, 16-33% have delayed development of regulatory competencies at age 2 years.

Relationship between BRS and MDI/PDI. These are column percents.

BRS Category	BRS Score	MDI<70	MDI 70-84	MDI 85+	PDI <70	PDI 70-84	PDI 85+	Row N
Orien/Engage	Non-Optimal	26	15	7	26	14	7	124
	Questionable	21	12	9	17	15	10	115
	WNL	53	73	85	58	71	84	649
Emot Reg	Non-Optimal	28	13	6	23	16	6	120
	Questionable	26	21	10	25	17	13	154
	WNL	46	66	84	52	68	81	614
Column N		238	225	425	278	180	430	

Abstract 32

Does Autoimmune Disease in Mothers with the Premutation of Fragile X Increase Risk of Autism Spectrum Disorders in Children?

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Purpose: Increased incidence of autoimmune diseases (AD) in families of children with Autism Spectrum Disorders (ASD) has been reported. Why autism occurs in some individuals with fragile X syndrome (FXS), but not all, is not known. In carrier mothers, there is an increased risk for AD. We therefore examined whether or not AD in mothers with the premutation of fragile X may increase the chance of having a child with ASD. Methods: Participants were enrolled in a study of genotype-phenotype relationships in families affected by FXS. Included in this analysis were 36 carrier mothers (of 53 children) with AD and 36 carrier mothers (of 48 children) without AD. AD was diagnosed by a physician. ASD was confirmed by at least one of these measures, including ADOS, ADI-R and DSM IV. Results: The three most common AD in carrier mothers were thyroid problems (63.9%), fibromyalgia (30.6%) and multiple sclerosis (13.9%). Child's mean age, sex and type of the fragile X mutation between both groups of mothers with and without AD were not significantly different. Overall cognitive ability in both groups of children was in a mild range of intellectual disabilities. 35 of 53 children (66%) who have mothers with AD were diagnosed with autism (39.6%) and ASD (26.4%), compared to 25 of 48 children

(52.1%) whose mothers never had AD met the criteria for autism (27.1%) and ASD (25%) (OR = 1.79 [0.80, 3.99], P = 0.15). Interestingly, children whose mothers had AD were likely to have higher rate of seizures (23.1% VS 4.2%, OR = 6.9 [1.46, 32.7], P = 0.006) and aggression (56% VS 28.3%, OR = 3.23 [1.38, 7.56], P = 0.006) when compared to the children whose mothers never had AD. Conclusion: There was no significant association between AD in carrier mothers and presence of ASD in their children. However, seizures and aggression are significantly increased in these children suggesting an additive effect in utero with exposure to AD or perhaps an additive genetic effect may lead to these problems.

Abstract 33

Computerized Working Memory Training with Survivors of Childhood Cancer

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Purpose: Neurocognitive late-effects in survivors of CNS-impacting childhood cancer are well-established in the literature. Specifically, deficits in attention and working memory appear to impede survivors ability to acquire new information at developmentally-appropriate rates. The present study evaluated a computerized, home-based working memory training program known as CogMedRM with CNS-impacted childhood cancer survivors. This program was developed for use with children with ADHD. It was hypothesized that participants who successfully completed the intervention would show increases in attention and working memory at the end of the intervention period as compared to children who completed a low-dose version of the program. Methods: 24 survivors of ALL and brain tumors aged 8-16 years with documented attention and/or working memory deficits participated in a randomized, placebo-controlled trial of a 25-session computerized, home-based working memory intervention. Survivors completed measures of intelligence (WASI), memory (WRAML2), attention (CPT-II, ConnersRating Scales), and quality of life (PedsQL") at baseline. Memory, attention and quality of life measures were repeated post-treatment (and 3-months later). Feasibility and acceptability data was collected after 12 and 25 sessions. Results: Children in both conditions demonstrated a high level of compliance with treatment, with 92% completing training. Additionally, parents and children reported high levels of feasibility and acceptability. Children who completed the intervention (n=12) demonstrated significant decreases in parent-rated inattention and increases in attention and working memory skills as compared to the children who completed the placebo program (n=12). However, no significant differences in parent- or child-reported quality of life between groups were found. Conclusion: This pilot study of a home-based, computerized cognitive-training intervention provides evidence of the feasibility, acceptability, and preliminary efficacy of a novel approach to addressing neurocognitive late effects in pediatric cancer survivors. The intervention is convenient, cost-effective, and enjoyable for participants, and has the potential to be widely-disseminated among a survivor population.

Abstract 34

Adolescent Suicidality in Males and Females: A Longitudinal Investigation of Suicide Risk Predictors

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Purpose: Each year, 1 in 5 adolescents contemplates suicide, and 5% to 8% attempt suicide. Suicide was the 3rd-leading cause of death among youth 15 - 19 in 2005. Pathways of suicidality appear multi-determined by individual, social and familial risk factors, and may also be gender-specific. Males are almost 4 times more likely to complete suicide, while females are 2 - 9 times more likely to contemplate or attempt suicide. This longitudinal investigation compared suicidal and non-suicidal youth on the differential impact of risks over time. Given the prevalence of suicidality, it is important for frontline practitioners to be aware of gender-specific risk constellations. Methods: Participants were recruited from 3 ethnically diverse schools for a longitudinal, family-centered intervention study targeting adolescent behavior problems (see Connell et al., 2007). This study represents risk data collected in the 11th grade (n = 794; 53% male; 43% Caucasian) and its impact on suicidality 2 years later (n = 723). Risks assessed included depressive symptoms, antisocial behaviors, substance use, deviant peer affiliation, and family relationships. Logistic regression analyses identified risk impact on suicidality (i.e., ideation, plans, & attempts) 2 years later. Results: Suicidality was reported by 11% of males and females. Predictors of male suicidality included depressive symptoms (B=1.16, S.E.=.32, p<.01) and antisocial behaviors (B=1.07, S.E.=.52, p<.05), with a trend for past suicidal ideation under stress (p=.08). Among females, predictors included lack of intervention (B=.93, S.E.=.45, p<.05) and having deviant peers (B=.58, S.E.=.23, p<.05), with trends for depressive symptoms (p=.06) and past suicidal ideation under stress (p=.09). Ethnicity, substance use, and family relationships were not significant. Conclusion: The pathways of suicidality over time may differ based on sex. While both groups appear somewhat affected by past suicidal ideation under stress, males appear more affected by depression and impulsive-aggressive behavior, while females appear more affected by deviant peers and the absence of psychological intervention.

Abstract 35

Retrospective Case Studies on Childhood Disintegrative Disorder: A Report of the Diagnostic Features and Treatment Methods

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Purpose: Childhood disintegrative disorder (CDD) is a rare pervasive developmental disorder characterized by marked deterioration of developmental and behavioral functioning following a period of at least two years of generally normal development. CDD was the first diagnostic concept to be described in the literature that accounted for the severe and pervasive disorders of development in children; yet, it remains the least understood. The lack of knowledge could be due to a number of factors including the profound rarity of this disorder, the likelihood that CDD has been largely underdiagnosed, and the difficulty in properly identifying CDD apart from autism. Due to the limited number of case reports currently available in the literature, further research into CDD is warranted. The intent of this presentation is to review the current diagnostic description of childhood disintegrative disorder (CDD) and present the developmental, behavioral, psychosocial, and medical histories of nine children who have been diagnosed with this rare disorder at a major Midwestern medical facility. Methods: A medical index retrieval system was used to locate the medical record of any patient whose record was indicative of the presence of CDD. The search parameters included all possible diagnostic codes for CDD. The complete medical record for each patient was reviewed and indicated that a final positive diagnosis of CDD was made in nine of the 12 cases. Results: For each of the nine cases, all relevant information was abstracted from the childs medical record. Detailed and comprehensive report of the developmental, behavioral, psychosocial, and medical histories and treatment recommendations will be presented from two of the nine cases. Summary reports on the available information from the remaining seven cases will be presented. Conclusion: The addition of these nine case reports to the existing literature will have a major influence on the way that CDD is conceptualized and subsequently treated.

Abstract 36

Further Validation of the Pediatric Symptom Checklist with a Chronically Ill Pediatric Population

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Purpose: The purpose of the current study was to replicate/extend the literature assessing the psychometric properties of the Pediatric Symptom Checklist (PSC) as a screening tool for child behavioral symptoms. Methods: Parents of children (N = 393) diagnosed with either Type I diabetes or sickle cell disease (SCD) attending a routine medical appointment were invited to participate. Parents completed a demographic questionnaire, the Child Behavior Checklist (CBCL) and the PSC. Families were invited to complete the PSC again 1 month later. Half of the children had been diagnosed with Type I diabetes (52%) or were female (50%). The children ranged from 6 to 18 years of age; the majority was African-American (75%) and the remaining was Caucasian. The average score for the PSC was 10.37 (SD = 9.64) and the T-scores across all of the CBCL subscales fell within the non-clinical range. Results: An exploratory factor analysis of the PSC was completed using an oblique (promax) rotation. Based on the results of the scree tests and eigenvalues greater than 1, a 4 factor solution accounting for 33% of the variance was examined. Item loadings greater than .30 were considered to be significant. The 4 factors included internalizing, externalizing, attention, and illness symptoms. Correlational analyses revealed a significant relation between the two PSC scores ($r = .70$, $p < .0001$). Furthermore, the four factors of the PSC were significantly related to all of the empirically derived subscales of the CBCL. The PSC internalizing factor had the highest correlation with the CBCL anxious-depression and withdrawn-depression scales ($rs = .76$-$.78$, $p < .0001$) and the PSC externalizing scale had the highest correlations with the CBCL rule-breaking and aggressive behavior scales ($rs = .67$-$.75$, $p < .0001$). The PSC attention problems factor and the CBCL attention problems scale ($r = .80$, $p < .0001$) and the PSC illness factor and the CBCL somatic complaints scale ($r = .70$, $p < .0001$) had the highest correlations. Conclusion: The findings from the present study suggest that the PSC has good construct validity, reliability and stability and may be useful for use in pediatric medical settings for identifying children who may be in need of further behavioral services.

Abstract 37

Can Minocycline be a Targeted Treatment of Fragile X Syndrome ?

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Purpose: Minocycline can normalize the synaptic connections in the fragile X knock out mouse by lowering matrix metalloproteinase-9 (MMP-9) levels. This is a preliminary survey to see the benefits and the side effects of minocycline treatment in children and adults

with fragile X syndrome (FXS). Methods: We surveyed 50 patients with FXS who received minocycline treatment for at least 2 weeks. Changes in language, academic abilities, attention, behaviors, physical features and adverse effects of minocycline were assessed by a parent questionnaire. Results: The mean duration of minocycline treatment was 3.6 ± 4.6 months. Of 50 families who were interviewed regarding treatment of their children, parents and/ or adult patients reported that 74 % had improvement in at least one cognitive/behavioral area including language (54%), attention (50%), social communication (44%), academic abilities (40%) and anxiety (30%). However, we also found 14% of patients became more hyperactive, 12% demonstrated an increase in moodiness and 12% developed sleep disturbances after minocycline treatment. There were additional side effects including loss of appetite (15.1%), gastrointestinal upset (11.3%), diarrhea (7.5%) and headache (7.5%). Conclusion: These findings suggest that there may be benefits from minocycline treatment in FXS especially in younger children. Controlled trials are needed to prove the efficacy of minocycline in those with FXS.

Abstract 38

Child Rearing Practices of Parents of Children with Cancer and Parents of Comparison Children: Perspectives of Parents and Professionals

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Purpose: The number of children diagnosed with cancer each year in the U.S. is increasing; the 5-year survival rate has improved dramatically. Parental reactions to their child's diagnosis could result in alterations of their child-rearing practices, although these changes may not be in the children's best interests as they become long-term survivors. The purpose of this study was to obtain predictions from experts in pediatric oncology about how pediatric cancer impacts child-rearing, and to determine whether parents of children with cancer report similar challenges. Methods: The Child-Rearing Practices Report (CRPR) was given to 11 professionals (4 MDs, 1 PNP, 2 LISW, 3PhD) with at least 2 years of experience in pediatric oncology. Data were also obtained from 94 mothers and 67 fathers of children with cancer (n = 98; 52 ALL; 29 lymphomas; 17 solid tumors), and 98 mothers and 75 fathers of comparison children (n = 98). Children with cancer were between 7-16 years (M = 12.01) and 34 of the children with cancer were female (35%). Comparison peers were the same gender/race, and closest date of birth and recruited one-to-one from each classroom of the child with cancer. All parent data were obtained in the home while children with cancer were in first remission on chemotherapy. Results: 8 of 11 experts predicted that 14 of the 91 CRPR items would be different for parents of children with cancer in the following areas: over-involvement, discipline, worries about the child, and nutritional concerns. Results from parents showed some differences from comparison parents, but not full agreement with the experts. Fathers of children with cancer rated 4 of the 14 predicted items differently than comparison fathers; mothers of children with cancer rated 6 of the14 predicted items differently than comparison mothers. Mothers and fathers of children with cancer shared three concerns: worry about their child's health, tend to spoil child, and don't want child seen as different. Conclusion: Findings suggest differences in the impact of a child's cancer on child rearing for mothers and fathers with mothers showing more differences from comparison mothers. Over protective parenting is a real concern.

Abstract 39

"My IBD Book": A Brief Drawing Intervention for Children Hospitalized with Inflammatory Bowel Disease

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Purpose: This study examines the effect of a brief guided drawing intervention on the attitude towards illness and hospitalization experience of children with Inflammatory Bowel Disease(IBD). Methods: Children aged 8-18 years old with IBD admitted to a pediatric hospital were given the opportunity to participate in a randomized controlled trial of a brief drawing intervention. Participants were randomized to receive either the brief art intervention or to be in the control group and receive usual hospital art care (child life, visiting artists, etc). The brief art intervention consisted of 2 sessions of 15 minutes each where a research assistant gave each participant drawing prompts related to IBD, including "draw IBD" and "draw your medications". Data was collected at 3 time points: study entry, at the end of hospitalization, and 1 month after hospitalization. At the end of hospitalization, participants and parents completed a visual analog rating scale of their experience with art in the hospital. At each of the 3 time points, participants completed the Child Attitude Towards Illness Scale, a 13-item standardized measure, utilizing a 5 point likert scale. Results: There were 16 participants: mean age of 15.5, 12 female, 4 male, 8 with Crohn's, 8 with Ulcerative Colitis, 9 in the control and 7 in the drawing group. The drawing group had a significant improvement in attitude towards illness from 2.8 pre-intervention to 3.2 one month post-intervention ($p<0.01$). The control group score remained 3.1 at both time points. The drawing group reported a significantly greater amount of art in the hospital, usefulness of art in the hospital, and fun with art in the hospital as compared to the control group ($p<0.01$). There was a trend towards the intervention group reporting being less bored in the hospital and feeling like their parents and doctors better understood how they viewed their illness. Conclusion: A brief 30-minute, 2 session art intervention can improve the hospital experience and attitude towards illness of children hospitalized for IBD. In addition, there is a trend towards participation leading to children believing that their doctors and parents better understand their perspective on their illness.

Poster Session Abstracts

Abstract 40

Promoting Developmental Screening Through Interactive Community-Based Education

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Purpose: To evaluate the impact of a community-based educational intervention on healthcare provider knowledge of developmental surveillance and screening and community resources, and to assess factors related to provider screening practices Methods: Healthcare providers (i.e, physicians, nurse practitioners, public health nurses) (N=117) of children age 0-5 attended an educational workshop. Learning objectives addressed the 2006 AAP policy statement on developmental screening and referral to community resources. Content was delivered using an interactive, case-based/problem-based learning (PBL) format. Provider knowledge was assessed pre-/post-intervention, with items grouped into 3 content categories: surveillance, screening, and resources. Pre-/post- responses, coded as correct or incorrect, were analyzed with Wilcoxon signed-rank test. Predictors of provider screening were assessed with logistic regression. Results: Providers improved their content knowledge across all 3 categories. Providers were able to define surveillance and screening and appropriate ages to conduct both, but were less able to provide indications for screening compared to surveillance. Providers increased their knowledge of autism screens and ages of children served by Early Intervention (EI) services, school districts, and a state-based program for children with cerebral palsy and other neuromuscular conditions (CCS-MTP). Providers showed improvement in their understanding of CCS-MTP, but showed relatively little improvement from high baseline rates of >80% correct responses related to understanding of EI and school district services. Initial regression analyses suggested that provider and practice factors did not influence frequency of screening. Conclusion: Interactive, case-based learning is an effective and innovative method for increasing provider knowledge of developmental surveillance, screening, and resources. Further study is needed to determine the degree to which this type of intervention leads to practice change.

Abstract 41

The Role of Parenting Capacity Variables and Health-Related Quality of Life in Pediatric Cancer

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Purpose: To assess the relationship between parenting capacity variables, including parental overprotection, perceived child vulnerability, and parenting stress, and parent-proxy report of health-related quality of life in pediatric cancer. Methods: Participants were 89 parents of children, ages two to 16 (M = 6.5 years, 57% male, 80.9% Caucasian), who were diagnosed with pediatric cancer. Parent participants completed a demographic form, the parent-proxy report of the Pediatric Quality of Life Inventory 3.0 Cancer Module (PedsQL), Parent Protection Scale (PPS), Child Vulnerability Scale (CVS), and Parenting Stress Index/Short Form (PSI/SF). A medical chart review was also conducted. Participants were recruited while attending outpatient appointments at the cancer center of a midwestern childrens hospital. Results: Hierarchical regressions indicate that each of the parenting capacity variables was independently related to parent-proxy report of health-related quality of life. When the three parenting capacity variables were entered simultaneously into a single hierarchical regression, the results of the overall model were significant, $F(3, 81) = 7.577$, $p < .001$, and perceived child vulnerability emerged as a significant predictor of parent-proxy report of health-related quality of life, $t(84) = -2.826$, $p = .006$. Conclusion: Parental overprotection, perceived child vulnerability, and parenting stress were found to be related to health-related quality of life in a pediatric cancer population. The findings support a transactional relationship between discrete parenting variables and disease-specific health-related quality of life in children with cancer.

Abstract 42

Psychological Distress in the Pediatric Obese Population

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Purpose: While the literature on adult obesity has focused on psychological correlates, such as the relationship between depression and obesity, little research exists on these relationships in the pediatric obese population. Thus, the purpose of this study was to examine the psychological profiles of participants in a pediatric obesity intervention program through parent and self report measures. Methods: Data from 53 participants (22 males, 31 females, mean age = 9.3, SD = 1.2) in a 12-week pediatric obesity intervention program were utilized in this study. The participants were predominantly Latino (n = 44), though a few were African-American (n = 3), Caucasian (n = 3), and other (n =1). The participants psychological profiles were obtained at intake from the Behavior Assessment System for Children (BASC) self-report, BASC parent report, and Child Depression Inventory (CDI). Results: Mean scores on the overall behavior scales were in the Average range on both the self and parent report forms (BASC-PRS Behavioral Symptoms Index mean T = 51.9, BASC-SRP Emotional Symptoms Index mean T = 49.2). Mean scores on the depression and anxiety scales were in the Average range as well (BASC-PRS Depression mean T = 51.3, BASC-SRP Depression T = 49.1; CDI Total T = 47.2, BASC-PRS Anxiety mean T = 50.8, BASC-SRP Anxiety T = 47.3) However, a significant percentage of children were noted to be clinically elevated on the depression and anxiety scales (13-25% depression, 10-19% anxiety). Paired samples t-tests comparing parent reports to self-reports indicated no significant differences between parent and self report on the depression or anxiety scales (t = 1.067-1.763, p = 0.158-

0.084). Conclusion: The study results suggest that on average psychosocial difficulties were not a significant clinical issue for the majority of the participants. However, a considerable percentage of the participants did report experiencing clinically significant levels of depression and anxiety that needs to be addressed therapeutically. These results indicate that intervention programs need to screen participants for psychological distress and provide appropriate interventions. Given the small number of participants and the homogeneity in their cultural backgrounds, additional, more stringent, research is needed to determine whether the relationship between obesity and psychological distress noted in this study can be generalized to the larger pediatric obesity population.

Abstract 43

Assessing Parent Interest in a Spanish-Language Parenting Intervention Offered in a Primary Care Clinic.

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Purpose: Latino children living in the United States are at increased risk for Disruptive Behavior Disorders (DBD) than their non-Latino, Caucasian peers. The long-term costs of DBD are overwhelming yet fewer than 25% of Latino individuals receive the mental health care they need. The purpose of this study was to examine the feasibility of a Spanish-based parenting intervention in a pediatric primary care clinic specializing in treating Latino children. Methods: For this study, the Chicago Parenting Program (CPP), a validated behavioral parenting intervention, was introduced in an inner city pediatric primary care clinic serving mainly Puerto Rican, bilingual patients. All Spanish-speaking parents of patients aged 24 months - 8 years, 11months old were approached during their child's scheduled clinic visit and screened for participation. Twenty-four families were approached during a two month period and asked to complete the Pediatric Evaluation of Developmental Status (PEDS – Spanish translation). Any parents who endorsed concerns about their child(ren)'s behavior were invited to participate in the Saturday morning, weekly, hour-long parenting sessions conducted by a graduate level pediatric psychology student. Results: Nineteen (79%) parents screened endorsed concerns about their child(ren)'s behavior and 15 (63%) parents expressed interest in participating in the parenting sessions. Conclusion: Primary care clinics are emerging as innovative and effective settings for detecting and providing interventions for child behavior problems even before children begin school (Stancin, Perrin & Ramirez, 2009). These data support initial acceptability of a primary care-based, Spanish-language, parenting intervention. Current and future research is focused on assessing the feasibility and effectiveness of the parenting intervention.

Abstract 44

Written-Language Disorder (WLD) without, or with, Reading Disorder (RD) A Population-Based Birth Cohort Study

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Purpose: To compare incidence rates, gender, age diagnosed and comorbidities between WLD without RD (WLD only) and WLD with RD. There are no epidemiologic studies on the incidence and other epidemiologic characterizations of WLD without or with RD in the United States. Methods: Subjects included all children born 1976-1982 in Rochester, MN who remained in the community after age 5 (N=5,718). Records from all public/private schools, all sources of medical care, and private tutoring were reviewed in detail for every child in the birth cohort. All individually administered IQ and achievement tests, comorbidities (e.g., ADHD) were abstracted. Three formulas (regression-based discrepancy, non-regression-based discrepancy, low achievement) were used to identify WLD, RD, and math LD cases. WLD subjects who did not have RD were designated as WLD only. Research identified ADHD cases were defined by a model combining three categories of information (DSM-IV criteria, ADHD specific questionnaires, clinical diagnoses). Comparisons between the two groups were evaluated using the chi-square test and the Wilcoxon rank sum test. Results: Based on the entire birth cohort, the cumulative incidence of WLD only and WLD + RD was 4.4% and 12.4% by age 19, respectively. Among all WLD incidence cases (N=806) we identified 203 (25%) with WLD only and 603 (75%) with WLD + RD. There were significant differences between WLD only vs. WLD + RD in male gender (61% vs. 69%, $p=0.027$), median age diagnosed (11.3 vs. 8.3 ; $p<0.001$, and presence of math LD (55% vs. 83%; $p<0.001$). However, the proportion with ADHD was similar between groups (29% vs. 27%; $p=0.13$). Conclusion: This is the first study of comparisons between WLD only and WLD + RD subjects from a population-based birth cohort. Both conditions were not rare among school children. Ambulatory and school settings should promote increased and early effort in identifying and treating boys and girls with any WLD, with or without comorbidity.

Abstract 45

Parents' Perceptions of Pharmacological and Non-pharmacological Techniques for Pain Control in Children

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Purpose: Parents serve as the primary managers of their children's pain by teaching children coping strategies and pain reduction techniques. This study assesses parents' opinion and use of pharmacological (such as non-prescription analgesics) and alternative pain management (such as massage and acupuncture) techniques for their children. Methods: Participants are being recruited us-

ing a community sampling technique. Currently, 400 parents, who have children between the ages of 1 and 8 years old, have been surveyed. Ongoing data collection will include parents of children in adolescence so comparative analyses between age groups can be done. Parents are asked, via an online survey, questions regarding their use of and comfort with medications and alternative techniques when caring for their childs pain. Results: Preliminary results indicate that most parents were somewhat or very comfortable giving their child analgesics. The majority of parents reported that they give their child pain medication to improve their childs comfort. Parents were also asked about their concerns when administering pain medications, and the primary negative consequence for pain medication reported was potential overdose. The most common reasons parents reported for not administering pain medication included: able to talk child out of needing medication, use of non-medication approaches, thought child was exaggerating severity of pain, thought child was not really in pain, thought the pain would pass quickly, and thought the child was too young to receive pain medication. Parents reported using the following alternative techniques when their children experienced pain: comforting, massage, applying ice to the area of pain, giving the child attention, giving liquids, and giving a bath. Conclusion: The results from this study can provide insight into parents perceptions of medication use for their children, especially when discussing negative consequences of analgesic use and the rationales parents use when deciding whether or not to administer medications for their childs pain.

Abstract 46

Cancer-Related Stressors and Emotional Adjustment in Children with Cancer

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Purpose: The purpose of this study was to examine which cancer-related stressors most affect children with cancer, and to examine the relationship between stressors and emotional distress in these children. Methods: Children (10-18-years-old; N = 58) reported on cancer-related stressors they had experienced on the Pediatric Cancer version of the Response to Stress Questionnaire (RSQ). The RSQ includes 10 items rated on a scale from 1 (not at all) to 4 (very) based on how stressful they have been. Mothers (N = 57) and fathers (N = 28) also completed the RSQ about their children. Children completed the Youth Self-Report (YSR) and parents completed the Child Behavior Checklist (CBCL) about the child's emotional distress. Results: The percentage of children, mothers, and fathers that rated each stressor as (3) "somewhat" or (4) "very" stressful for the child ranged from 7.1% (father report) for "not understanding doctors" to 70.2% (mother report) for "not able to do things" and "sick from treatment."The most frequently endorsed stressors across informants included disruptions in daily functioning (not able to do things; hospital/clinic visits) and side effects of treatments (pain, feeling sick). Total scores were also calculated by summing the 10 items. T-tests compared child, mother, and father total scores. Mother reports of their children's stress were significantly higher than child reports ($t = -2.45$, $p < .05$); no other comparisons were significant. Correlations between total stressor scores and the Anxious-Depressed subscales of the YSR and mother and father CBCL indicated that child and mother reports of the child's stressors were significantly correlated with child and mother reports of child emotional distress (r's ranged from .25 to .38, $p = .01$ to .06). Conclusion: The results provide some of the first detailed information on the types of stressors experienced by children with cancer and indicate that higher levels of cancer-related stress are related to higher levels of emotional distress in children.

Abstract 47

Verbal Working Memory and Sentence Comprehension in Preterm Children 9-16 Years Old

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Purpose: In typically developing children, verbal working memory (VWM) has been found to play an important role in sentence comprehension and to predict overall language performance. A study on the effects of prematurity on VWM in preschool-age children found that preterm birth negatively affected both phonological working memory and grammatical ability, which were correlated with each other. We sought to determine whether poor VWM would persist into school-age and whether VWM would contribute to differences in sentence comprehension, after controlling for the effects of intelligence. Methods: We assessed VWM (CELF-4 Language Memory Index), Verbal and Performance IQ (WASI), and sentence comprehension (errors in a complex sentence-picture matching task) in 56 children (ages 9-16 years) born prematurely and 25 age- and SES-matched controls. Hierarchical multiple regression analysis was performed to examine relationships among VWM, sentence comprehension, Performance and Verbal IQ (introduced first), birthweight, SES, and sex. Results: On all measures, the preterm group performed lower than the comparison group. In models predicting VWM, Verbal IQ (Beta .56, $p<.001$) and birthweight (.21, $p<.05$) accounted for 64% of the variance. In the model predicting sentence comprehension errors, Performance IQ (-.44, $p<.01$) and birthweight (.28, $p<.05$) accounted for 43% of the variance. VWM approached significance in the second model (.28, $p=.089$). Other factors were not significant. Conclusion: In older school-age children born prematurely, birthweight, as the index of prematurity, contributed to variance in VWM and sentence comprehension over the contribution from intellectual ability. The association of VWM and sentence comprehension was weak. Future research will assess whether the degree of white matter and other neural injury from prematurity explains the effects of birthweight on VWM and sentence comprehension.

Abstract 48

Neurodevelopmental Impact of Congenital Heart Defects in Down Syndrome

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Purpose: Down syndrome (DS) is the most common genetic cause of mental retardation with an incidence of 1 in 733 live births. Nearly half of all children with DS are born with a congenital heart defect (CHD). Atrioventricular septal defect (AVSD), the most common form of CHD in DS, occurs in 38-60% of children with DS and CHD; yet, virtually no studies have examined their neurodevelopmental outcomes. This study is the first to characterize the early developmental profiles of children with DS and AVSD (DS+AVSD) compared to age-matched children with DS without CHD (DS-CHD). Methods: Participants consist of 2 groups: 6 subjects with DS+AVSD (mean age 15.4 months) and 18 subjects with DS-CHD (mean age 15.6 months). The Bayley Scales of Infant and Toddler Development III was administered by a psychometrician who was blinded to each subject's cardiac status. The Bayley III was administered to the DS+AVSD group after cardiac repair. Results: The DS+AVSD group exhibited lower composite scores in all domains relative to their age-matched DS-CHD, with the cognitive and language domains showing significant differences, $p < .05$. The motor, social-emotional, and adaptive composite scores are not significantly different between the two groups. Conclusion: Advances in surgical repair have lengthened the anticipated lifespan of children DS+AVSD, raising the question of whether AVSD and/or its treatment could put a child with DS at risk for additional developmental deficits. Characterization of their early developmental trajectories is also critical for designing early interventions to maximize individual potential. Our preliminary cross-sectional data document that children with DS+AVSD have greater developmental delays especially in the language domain, compared to children with DS-CHD. Studying young infants with DS+AVSD allows us the opportunity to identify variables linked with early deficits that may lead to further delayed development, and initiate interventions to improve their lives.

Abstract 49

Frequency of Cytogenetic Abnormalities in Children with Attention-deficit Hyperactivity Disorder Exposed to Extended-release Methylphenidate

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Purpose: To examine chromosomal aberrations (CAs), micronuclei (MN), and sister chromatid exchanges (SCEs) with extended-release methylphenidate (MPH-ER) when administered to treatment-naïve (no psychostimulant medications) children with ADHD. Methods: A randomized, 3-month, open-label study evaluated cytogenetic effects of MPH-ER (10-60 mg/d) plus behavioral therapy (BT) vs BT alone in treatment-naïve children 6-12 yr with ADHD. BT consisted of a multimodal approach (non-compliance, impulse behavior, organizational skills). Genotoxic variables included change from baseline at 84 days in frequency of CAs/100 cells excluding gaps and MN/1000 binucleated cells, and SCEs evaluated by blinded investigators using a Poisson model comparing treatment ratios (TR). Efficacy was also evaluated using the Conners ADHD/DSM-IV Scales for parents (CADS-P) and severity and global improvement ratings of Clinical Global Impression (CGI-S and CGI-I). Results: 109 children (mean 8.4 yr; 66 males) were randomized to MPH-ER + BT (n=53) or BT (n=56). Decreases of 40% and 56% in CAs, (TR=1.34; P=0.53), 37% and 26% in MN (TR=0.85; P=0.28), and 6% and 5% in SCEs (TR=0.99; P=0.81) were noted in the MPH-ER + BT and BT groups, respectively. MPH-ER + BT and BT resulted in mean (±SD) changes in CADS-P total score of -17.0 (±11.23) vs -7.0 (±9.97), -1.9 (±0.98) vs -0.6 (±1.01) in CGI-S, and 1.9 (±0.81) vs 3.0 (±0.97) in CGI-I, respectively. The mean (±) changes in CADS-P DSM-IV Inattention and Hyperactivity subscale scores were -8.8 (±6.38) vs -3.8 (±6.32) and -8.2 (±6.05) vs -3.2 (±4.6) in the MPH-ER + BT and BT groups, respectively. Common adverse events (>10% of patients) in the MPH-ER + BT vs BT groups were decreased appetite (19.2% vs 0), headache (13.5% vs 1.9%), and upper respiratory tract infections (11.5% vs 9.6%). Conclusion: Decreases in CAs, MN, and SCEs were similar with MPH-ER + BT and BT. MPH-ER treatment was not genotoxic in treatment- naïve ADHD pediatric patients, was efficacious and generally well tolerated.

Abstract 50

Obesity in Children and Adolescents with Chronic Pain: Associations with Pain and Activity Limitations

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Purpose: Obesity is associated with depression and disability in adults with chronic pain, but less is known about obesity among youth with chronic pain. The purpose of this study was to 1) identify the prevalence of overweight and obesity in children and adolescents receiving treatment for chronic pain, and 2) examine associations between Body Mass Index (BMI), pain intensity, activity limitations, and other patient characteristics in this population. Methods: Data was obtained from records of 118 patients, ages 8 to 18, seen in a multidisciplinary pediatric pain clinic in Oregon State. Information about child age, gender, pain problem, duration and severity, medical diagnoses, current medications, height and weight were collected from medical records and intake questionnaires. The CDCs pediatric BMI calculator was used to obtain percentile and category (underweight, healthy weight, overweight, obese). Children and parents completed the Child Activity Limitations Interview-21 (CALI-21), a self-report measure of activity limitations, which yield Active and Routine factor scores. Results: Results indicated a high rate of overweight and obesity among youth with chronic pain (10.2% overweight and 28.0% obese weight status). The rate of obese weight status was significantly higher in the cur-

rent sample (28.0%) compared to a large national sample rate of 21.0%, Ç2(1) = 3.24, p < .05, and compared to a state estimate of 18.5%, Ç2(1) = 6.89, p < .01. Presenting pain problem was related to BMI percentile such that children with low back pain had highest BMI percentile. Type of medication prescribed was not related to BMI or BMI percentile. BMI percentile was associated with limitations in vigorous activities (Active factor scores on the CALI) and higher pain intensity. Conclusion: BMI and weight status may be important factors to consider in the context of chronic pain and disability in children and adolescents. Future work should investigate the role of BMI in predicting other health and psychosocial outcomes in this population.

Abstract 51

Developmental and Behavioral Abnormalities of Children with FXS Gray Zone Alleles

Rebecca A. Kronk, PhD, School of Nursing, Sara C. Hamel, MD, Pediatrics, University of Pittsburgh, Pittsburgh, PA

Purpose: To describe the clinical presentation of children within the gray zone (45-54 CGG repeats) of Fragile X syndrome (FXS) using standardized measures of adaptive functioning, and behavior and emotional status as rated by parents and teachers. It was hypothesized that children with gray zone alleles would have scores indicative of increased functional problems on these on standardized instruments. Methods: Children were identified after evaluation at a developmental-behavioral pediatrics clinic and referred to our FX program. Six children (aged 30 months to 8 years) identified by DNA probe to be within the gray zone of FXS were evaluated using three standardized measures: Adaptive Behavior Assessment System Second Edition (ABAS-II), Child Behavior Checklist (CBCL), and Teacher Report Form (TRF). Parents, or legal guardians, completed the CBCL and ABAS-II; teachers completed the TRF. Results: For ABAS-II overall adaptive functioning (GAC) was between the 1st and 5th percentiles for 5 of 5 children. All 5 children had multiple specific domains of problematic functioning. For CBCL Total Problems scores were markedly elevated for 4 of 6 children (percentile range 89 -98th). For TRF Total Problems were markedly elevated for 5 of 6 children (percentile range 89-98th). Conclusion: We report on 6 children within the gray zone of FXS who demonstrate significant adaptive and behavioral dysfunction. The functioning of children with gray zone alleles may be affected by the FX mutation. The findings provide additional information directed at improving our knowledge of FXS gray zone alleles. Future studies are needed to further investigate the spectrum of functional involvement for children with gray zone alleles.

Abstract 52

Parents Knowledge and Attitudes Toward The Choking Game

Jessica M. Joseph, MS, Kathi M. Fine, MS, W. H. Davies, PhD, Psychology, University of Wisconsin-Milwaukee, Milwaukee, WI

Purpose: Many preadolescents and adolescents have been reported to take part in forced asphyxiation as a means of creating a feeling of being high without taking drugs. This game goes by different names, including The Choking Game, Blackout, and Space Monkey. The limited epidemiological data suggest that about 11% of adolescents report having engaged in this behavior. This typically begins as a group activity, but some begin engaging in this behavior alone, which significantly raises the risk of accidental death or disability. The CDC has offered a conservative estimate of 82 deaths between 1995 and 2007, although advocacy groups have estimated that the number actually exceeds 100 each year with numerous cases misclassified as suicides (www.stop-the-choking-game.com). This study surveyed parents of adolescents regarding their knowledge of the choking game and its associated risks, as well as their attitudes toward possible prevention efforts Methods: Participants were 252 parents of children between 12 and 17 years of age. Parents were predominately mothers (58%) and Caucasian (85%). Parents completed an on-line survey developed based upon information presented by GASP (Games Adolescents Shouldnt Play), an international advocacy group. Results: Eighty-eight percent of mothers and 64% of fathers reported being familiar with The Choking Game (phi=.28, p<.001). Considerably fewer, 51% of mothers and 26% of fathers reported having talked to their children about this activity (phi=.26, p<.001). Awareness of specific potential risks associated with the condition ranged from 78% (Physical Disability) to 96% (Death). Eighty-five percent of parents thought that The Choking Game should be included in drug abuse prevention programs, while 90% thought it should be included in school-based health curricula. The majority of parents (87%) also thought that online videos showing or glorifying The Choking Game should be restricted. Conclusion: Parents of adolescents in the United States appear to be quite knowledgeable about the Choking Game and its potential risks, and are overwhelmingly supportive of preventive measures. Parents may need specific help in how to talk to their children about this behavior, an important area for further research.

Abstract 53

The Victimization Pathway to Depressive Symptoms as Mediated by Self-Concept for Physical Appearance in Obese and Over-Weight Adolescents

Ryan E. Adams, PhD, Division of Developmental and Behavioral Pediatrics, Cincinnati Children's Hospital Medical Center, Cincinnati, OH, Stéphane Cantin, PhD, École de psychoéducation, Université de Montréal, Montreal, Quebec, Canada, William Bukowski, PhD, Psychology, Concordia University, Montreal, Quebec, Canada

Purpose: This presentation examines peer victimization as a predictor of depression in obese and over-weight adolescents, specifi-

cally examining self-concept for physical appearance as a mediator of this link. Methods: To examine this issue, two studies were utilized. Study 1 was the National Longitudinal Survey for Children and Youth, a longitudinal study of a stratified random sample of Canadian children (n = 1,287) and study 2 was a longitudinal study of French-speaking students from the public schools in the greater Montreal metropolitan area (n = 610). Both studies examined self-reports of peer victimization, self-concept for physical appearance, and depressive symptoms during early adolescence. Height and weight were self-reported in study 1 and researcher measured in study 2. These measurements were utilized for classification of participants' weight status according to cut-off points on Centers for Disease Control and Prevention's revised growth charts. Results: While study 1 examined obese status and study 2 examined overweight status, path analyses found similar findings for both studies. Both found that for only those with higher weight status, and not for lower weight status, peer victimization predicted increases in depressive symptoms over time and that this link was mediated by self-concept for physical appearance. In other words for high weight status adolescents, peer victimization lead to decreases in self-concept which lead to increases in depressive symptoms. Conclusion: Because the findings were limited to just those with heavier weight status, it suggests that there may be a synergy between the risk-factors for being victimized, such as obesity, and the outcomes of being victimized, such as more negative feelings of self-concept and depression. Being victimized may not only reinforce the negative self-concepts that a risk-factor for victimization, such as obesity, may cause, but a risk-factor for victimization, such as obesity, will also make it more likely that the adolescent will be victimized indefinitely. In other words, the risk-factors that strengthen the links in this pathway may also keep the pathway intact because it is also a risk-factor for being victimized.

Abstract 54

Family Burden Associated with Academic and Behavioral Problems in Childhood Cancer Survivors

Melissa K. Cousino, BA, Psychology, Case Western Reserve University, Cleveland, OH, Catherine C. Peterson, PhD, Pediatrics, University of Michigan, Ann Arbor, MI

Purpose: Specific aims were to: 1) investigate associations between child behavior problems and general and late effects-specific family burden; 2) identify a subgroup with presumed neuropsychological late effects, and 3) identify family burden specific to late effects. Methods: Survivors (n=43) of any childhood cancer and their parents participated in a cross-sectional survey by mail. The sample of survivors was 63% female and 83% Caucasian with a mean age of 12 years at time of study. Mean age at diagnosis was 3.2 years. Participants completed questionnaires assessing demographic and treatment information; late effects (academic, cognitive, and psychosocial concerns); general and late-effects-specific family burden; child behavioral functioning; and parent distress. Results: Significant correlations were found between late-effects-specific family burden and externalizing (r=.38) and internalizing (r=.44) child behaviors. General family burden was not significantly correlated with child behavior problems. Using our screening tool, we identified a subgroup with presumed late effects (n=14). T-tests comparing the survivors with and without late effects indicated that parents of survivors with late effects reported higher late-effects-specific burden (t=-2.91) and parental distress (t=-1.70). General family burden did not differ by late effects group status. Conclusion: Family burden specific to late effects was higher for parents of survivors with reported academic and behavioral late effects, indicating our measure identified unique burden for these parents. This burden was significantly associated with behavioral adjustment in childhood cancer survivors. Early detection and consistent measurement of late effects and disease-specific burden would facilitate intervention and potentially ameliorate the burden of late effects, including academic and behavior problems.

Poster Session II
Monday, October 5, 2009 from 2:00pm – 3:00pm

Abstract 55

Do mother-infant verbal interactions related to 6 month TV exposure mitigate adverse impacts on 14 month development?

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Purpose: Television (TV) exposure in young infants adversely impacts development. Mother-infant verbal interactions, critical to development, are limited during TV. Purpose: To determine whether mother-infant verbal interactions related to TV exposure in 6mo infants mitigate adverse impacts of TV on 14mo development. Methods: Longitudinal analysis of low SES mother-infant dyads enrolled postpartum in an urban public hospital, participating in a study of parenting interventions. Infant TV exposure assessed at 6mo with 24hr recall diary of program exposures during last typical day. Independent variable: 6mo TV interactions, present if mother reported a lot of talking to infant during 1 program. Dependent variables: 14mo child cognitive (Bayley) and language (PLS-4) development. Confounders: infant TV exposure 2 hr; maternal depression (PHQ-9); cognitive home environment (StimQ). Results: 311/320 (96%) infants had TV exposure at 6 mo, with 204/311 (66%) assessed for development at 14 mo. Mothers: 92% Latina, 40% HS grads. 11% had TV verbal interactions. 59% infants had 2 hrs TV. In multiple regressions (Model 1), TV 2 hrs was associated with reduced Bayley and PLS-4, while TV verbal interactions were associated with increases in Bayley and PLS-4 of comparable magnitude.

In Model 2, adjustment for cognitive home environment (StimQ) led to reduced association between TV interactions and Bayley/PLS-4 with loss of statistical significance. See table (*p<.05, **p<.01). Conclusion: TV verbal interactions may mitigate adverse impacts of exposure. Further study is needed of the added impact of TV interactions above that of the cognitive home environment. Counseling about TV in young children should emphasize the importance of verbal interactions. NICHD R01 HD047740

TV Exposure & Verbal Interactions Predicting 14mo Development

	6mo TV Expos.		Model 1	6mo TV int.		Model 1	Model 2
Dependent var	>=2hrs	<2hrs	Adj mean diff	Yes	No	Adj mean diff	Adj mean diff
14mo Bayley	94.7	98.5	-3.9*	99.5	95.8	6.5*	5.6 (NS)
14mo PLS-4	96.2	98.3	-3.3**	101.2	96.6	4.7*	3.2 (NS)

Abstract 56

Infant Media Exposure: Adverse Effects on Toddler Development

Suzy Tomopoulos, MD, Benard P. Dreyer, MD, Samantha B. Berkule, PhD, Arthur H. Fierman, MD, Karen Hopkins, MD, Pediatrics, New York University School of Medicine, New York, NY, Harris S. Huberman, MD, Pediatrics, SUNY Downstate, Brooklyn, NY, Alan L. Mendelsohn, MD, Pediatrics, New York University School of Medicine, New York, NY

Purpose: To assess whether duration and content of media exposure in 6mo old infants is associated with 14mo development. Methods: Longitudinal analysis of low SES mother-infant dyads, enrolled postpartum in an urban public hospital, in a study of parenting interventions. Predictor variable (6mo): media exposure assessed by 24hr recall diary of last typical day, including for each program: duration (mins), content (categorized as young child educational, young child non-educational, school-age/teen/adult). Due to skewed distribution, media exposure data analyzed using log-tranformations. Outcome variables (14mo): cognitive (Bayley), language (PLS-4) development. Confounders: maternal depression (PHQ9), cognitive home environment (StimQ). Results: 311/320 (96%) infants had media exposure at 6mo with 213 (67%) assessed at 14mo. Mothers: 92% Latina, 40% HS grads. Mean(SD) media exposure, in mins: Total 158.5(129.0), educational 23.8(39.8), non-educational 6.7(20.7), school-age/teen/adult 97.1(90.2), unknown 31.0 (83.5). 6mo media exposure for total and school-age/teen/adult media associated with lower 14mo Bayley and PLS-4 in unadjusted and multiple regression analyses. Neither educational nor non-educational associated with development. In regressions, each 2hrs of media associated with 3.6 point (95%CI: 0.3,7.0) decrease in Bayley and 3.0 point (95%CI: 0.7,5.2) decrease in PLS. (Table: tp<.10, *p<.05, **p<.01. Adjusted for gender, firstborn, maternal age, education, country of birth, lang, marital status, depression, cognitive home, study grp) Conclusion: Infant media exposure associated with lower 14mo cognitive, language scores. Association primarily due to school/teen/adult media. Results do not suggest positive effects of young child-directed educational programming. NICHD R01 HD047740

6 month Media and 14 month Development

	Total Media min		Educ Media min		School/Teen	
	r	sr	r	sr	r	sr
Bayley	-.18*	-.15*	-.02	-.01	-.16*	-.13t
PLS-Total	-.16*	-.15*	-.07	-.05	-.16*	-.18**
PLS-Auditory	-.15*	-.12t	-.05	-.02	-.16*	-.17**
PLS-Expressive	-.11t	-.13*	-.07	-.07	-.10	-.14*

Abstract 57

Shared Reading Among At-Risk, Latina Mother-Child Dyads: Trajectories from Postpartum to 24 Months

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Purpose: To examine reading behaviors from postpartum to 24mos among low SES Latina mother-child dyads enrolled in an urban public hospital as part of a larger study. Methods: During the postpartum period, mothers were interviewed about intentions/resources for shared reading including: plans to begin shared reading during infancy, and whether baby books were in the home. At 6, 14, 24mos, mothers were interviewed about overall shared reading (StimQ-READ: frequency, number of children s books in the home), and whether reading took place on a typical day (24hr recall diary). Results: 73 dyads assessed at all 4 ages: Mothers: 36% HS grads, 89% Spanish-speaking, 95% immigrants, 85% married; children: 40% firstborn, 52% female. Overall reading increased over 6-24 months, but typical daily shared reading did not change significantly. Shared reading intentions/resources and activities were robustly intercorrelated over 4 assessments in 2 years. 27/34 (79%) of mothers reporting shared reading on a typical day at 6 months

continued to report reading at 24 months; in contrast, 9/39 (23%) of mothers not reporting shared reading at 6 months did so at 24 months (chi-square 20.9, p<.001). Conclusion: While frequency of any reading increased over 6-24mos, % reporting reading on a typical day did not increase, suggesting no change in reading as part of a daily routine. Mothers were unlikely to report reading on a typical day at 24mos if they had not done so in infancy. Beginning in early infancy, child professionals intervening through programs like Reach Out and Read should refine strategies to promote shared reading and its integration into daily routines. NICHD R01 HD047740

Longitudinal Shared Reading

Age	StimQ			24hr recall diary
	% any reading	Mean (sd) days/wk read	Median (IQR) books	% reading typical day
6mos	82%	3.2 (2.1)	3 (2-6)	47%
14mos	99%	3.9 (2.4)	7 (5-11)	43%
24mos	100%	3.9 (2.3)	10 (5-20)	50%
p	<.001	.02	<.001	NS

Abstract 58

Characteristics of Children with ADHD and High IQ: Results from a Population-Based Birth Cohort

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Purpose: Limited information is available on the characteristics of ADHD among children with high IQ, although studies suggest that there are similarities to children with ADHD and normal IQ. The objective of this study was therefore to describe, contrast and compare the characteristics of ADHD among children with high IQ versus normal and low IQ through long-term follow-up. Methods: 379 children with ADHD were identified from a 1976-1982 birth cohort (N=5,718). Records from all public/private schools in the community, all sources of medical care and private tutoring centers were available and abstracted on 370. Research identified ADHD cases were defined by a model combining three categories of information (DSM-IV criteria, ADHD-specific questionnaires, clinical diagnosis). Full scale IQ scores obtained between ages 6 and 19 years were used to categorize children into 3 IQ groups: high (IQ120; N=34), normal IQ (80IQ<120; N=276), and low IQ (51IQ<80; N=21). ADHD cases were retrospectively followed from birth until emigration, death, or high school graduation/dropout. The groups were compared on gender, treatment received, comorbidities, school outcomes, and maternal education. Results: There were no significant differences among children with high, normal or low IQ and ADHD in numerous characteristics, including median age at which research criteria were fulfilled (9.5, 9.7, and 9.8 years), presence of psychiatric disorders (47, 50, 48%), stimulant treatment rates (79, 75, 90%) grade retention (13, 21, 25%) and school dropout (11, 26, 26%). The groups differed only in presence of co-morbid learning disorders (85, 63, 57%, p=0.026), level of maternal education (e.g. percentage with a college degree 44, 13, 16%; p<0.001) and reading achievement (median national percentiles 77, 42, 29, p<0.001). There was a trend toward male preponderance among high IQ cases (91%) versus normal (73%) and low (67%) IQ cases. Conclusion: These findings suggest that ADHD is similar among children with high, normal and low IQ, although high IQ may favorably mediate school outcomes. Diagnosis and treatment of ADHD are important for children across the spectrum of cognitive ability.

Abstract 59

Pediatric Nurses' Perceptions of Optimal Pain Management Across Departments

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Purpose: Compared to other age groups, children may be at risk for poor pain management (APS, 2003). However, there has been limited research on pain management in pediatric patients (Vincent, 2005). Understanding how nurses view optimal pain management for pediatric patients will help children receive better pain management. Methods: A multi-site investigation surveyed nurses from three pediatric nursing institutions (n=808). Participants completed an electronic questionnaire, adapted from the Barriers to Optimal Pain Management survey (Vincent, 2004). Two graduate research assistants independently coded responses to an open-ended question asking participants to define Optimal Pain Management. IntraClass Correlations (ICC) determined inter-rater reliability. For the first code (n=136), ICC=.96, establishing excellent reliability among raters. The coded definitions of optimal pain management were divided into three main categories: Patient Comfort, Level of Functioning and Medication Management. Results: Chi-squared results indicated significant differences between departments when Patient Comfort was used to define optimal pain management, $X^2(1)=6.345$, p<.05, showing that departments endorsed optimal pain management differently. The time nurses spent with patients in pain was significantly related to whether a nurse described optimal pain management in terms of Medication Management, t(770)=-2.609, p<.01. Nurses who defined optimal pain management in terms of Medication Management spent more time with patients in pain. Conclusion: Patient Comfort was frequently used to define optimal pain management and is consistent with the gold standard of using patients' self report as a measurement for pain. Also, the frequency with which nurses encounter patients in pain

is associated with how they perceived optimal pain management. Nurses who report working with patients in pain more frequently may be more aware of different ways to appropriately manage medication in order to provide the best pain management possible. Further studies are needed to investigate how the frequency of working with patients in pain influences how nurses describe optimal pain management.

Abstract 60

Failure to Thrive (FTT) and Long Term Cognitive Outcome in Children with Prenatal Cocaine Exposure.

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Purpose: There is no universally accepted definition of FTT. Most often used criteria are attained growth (AG) with weight <5% or growth velocity (GV) where weight falls across 2 centiles. To date, the relative impact of various criteria for FTT on poor cognitive development is unknown. The purpose of this study was to compare intellectual outcomes of children with prenatal cocaine exposure (PCE) who fit 3 mutually exclusive definitions of FTT, based on AG and GV principles. Methods: We studied 1240 mostly minority, low SES children (PCE 43% / <37 wk GA 41%) from birth to 9 yr in the multisite Maternal Lifestyle Study. Based on CDC growth charts, infants were classified as FTT-1 (15%) if AG only (wt <10% at 1 mo and wt <5% at 1 point 1-24 mo); FTT-2 (11%) if AG and GV (wt >10% at 1 mo and wt <5% at 1 point); FTT-3 (6%) if GV only (wt >25% at 1 mo and falling 2 centiles to <25% but never <5%) and non-FTT (65%). Cognitive development was assessed at 3 yr (Bayley), at 5 yr (WPPSI), at 7 yr (WISC) and at 9 yr (WASI). Mixed models examined the group effects of FTT and PCE on IQ at each age, adjusted for site, other prenatal and postnatal substance use, sex, neglect, HOME scale, SES, caretaker IQ, education and stress, and changes in caretakers. Results: IQ of children with FTT-1 at 3, 5, 7 and 9 yr were 4.4 points ($p<0.005$), 5.8 ($p<0.001$), 4.2, ($p<0.01$) and 4.1 ($p<0.005$) lower than non-FTT respectively (adjusted mean differences). IQ for FTT-2 was 3.4 ($p<0.05$) lower than non-FTT at 5 yr (adjusted mean difference), but not different at 3, 7, 9 yr ($p>0.05$). FTT-3 was not significantly different from non-FTT at any age (all $p>0.05$). Independent of FTT, PCE predicted lower IQ at 3 yr (1.7 points, $p<0.05$) and 9 yr (2.9 points, $p<0.001$), but effects were not maintained after adjustment for covariates. 60% of FTT-1 was <37 wk GA compared to 38% of other FTT and non-FTT. Conclusion: Weight <5% prior to 24 mo better predicts cognitive delay than GV criteria alone, if weight never reaches <5%, in this high risk population. Children already small at 1 mo show the greatest impairment and may warrant more intensive intervention.

Abstract 61

Effects of Guanfacine Extended Release on Disruptive Behavior, Parental Stress, and Global Improvement in Children With Attention-Deficit/Hyperactivity Disorder and Oppositional Symptoms

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Purpose: The primary objective of this randomized, placebo-controlled, flexible-dose study was to evaluate the effects of guanfacine extended release (GXR) on oppositional symptoms in children aged 6 to 12 years with a diagnosis of ADHD and presence of high levels of oppositional symptoms. Secondary efficacy measures included the 40-item Conduct Problem Subscale-Parent (CPS-P) of the New York Parent Rating Scale-School-Aged (NYPRS-S), the Parent Stress Index-Short Form (PSI/SF) questionnaire, and the Clinical Global Impressions-Improvement (CGI-I) scale. Methods: Subjects (N=217) were randomized to GXR or placebo. GXR was started at 1 mg/d and could be increased up to 4 mg/d during the 5-week, dose-optimization period, then maintained at optimal dose for 3 weeks. Results: Significantly greater reductions from baseline were seen on the CPS-P of the NYPRS-S for GXR relative to placebo beginning 3 weeks into dose optimization and continuing through dose maintenance (-16.0 vs -9.6 at endpoint, effect size = 0.59, $P<0.05$ at each visit and endpoint). Least squares mean improvement on the PSI/SF at endpoint was 17.0 for GXR compared with 7.7 for placebo (effect size = 0.51, $P=0.002$). Investigators rated a significantly greater percentage of GXR-treated subjects "very much improved" or "much improved" on the CGI-I compared with placebo beginning 3 weeks into the dose-optimization period (71.5% vs 32.0%, effect size = 0.51, $P<0.05$ at endpoint). Conclusion: This analysis further supports the clinical efficacy of GXR at optimized doses for treating children with ADHD and oppositional symptoms.

Abstract 62

Psychiatric Disorders (PD) in Mothers of Children with Attention-Deficit/Hyperactivity Disorder (ADHD): A Population-Based Study

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Purpose: To compare PD in mothers of children with and without ADHD through long-term follow-up of a large, population-based cohort. Previous research has suggested that psychiatric disorders (PD) are more common among mothers of children with ADHD. To date no population-based study has been conducted to determine the incidence of PD in mothers of children with ADHD. Methods: Subjects included 925 mothers of 319 research identified ADHD incident cases and 667 gender/age matched non-ADHD controls from a 1976-1982 birth cohort (N=5718). ADHD cases were defined by a model combining DSM-IV criteria, ADHD specific questionnaires, and clinical diagnoses of ADHD. Each mother s medical record, from all sources of medical and psychological care, was reviewed for PD from their first medical visit until last follow-up before the child s 21st birthday. Two analyses were performed for each PD. First, logistic regression models were fit to compare the odds of having a child with ADHD among mothers with vs. without a PD prior to the child s birth. Second, among mothers without a PD prior to the child s birth, Cox regression models were fit to estimate the relative risk (cases vs. controls) of being diagnosed with a PD after the child s birth until their 21st birthday. Results: Mothers with either depression or adjustment disorder before their child s birth were 2.1 (OR; 95% CI 1.0-4.5) and 2.7 (2.1-26.8) times more likely to have a child with ADHD, than a mother without these PD prior to her child s birth. Mothers of children with ADHD were significantly more likely to be diagnosed in the next 21 years after child s birth with depression (HR 1.5; 95% CI 1.1-2.1), major depression (2.5; 1.4-4.4), or adjustment disorder (1.6; 1.2-2.2), than mothers of children without ADHD. A similar trend was observed for anxiety (1.5; 1.0-2.2), substance abuse (1.8; 1.0-3.5), and personality disorders (1.9; 0.9-4.1). Conclusion: To our knowledge, this study provides the first population-based evidence for increased rates of psychiatric disorders (PD) among mothers of children with ADHD. Future studies on this cohort will compare psychiatric disorders among children with ADHD and their parents in order to better understand the relationship between ADHD and other psychiatric disorders.

Abstract 63

Developmental and Behavioral Co-Morbidities and Prescribing Practices for Children in a Preschool Developmental Evaluation Center

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Purpose: Determine the prevalence of developmental and behavioral disorders in preschool aged children evaluated at a specialty preschool developmental clinic and the pharmacologic interventions employed for identified behavioral disorders. Methods: This is a retrospective electronic chart review of all children ages 2 through 5 years 11 months, seen in a specialty developmental center during one calendar year. Documented diagnostic categories based on ICD-9 codes include developmental, behavioral, and medical diagnoses. Medications were classified based on generic classification and duration of action. Results: 569 Preschoolers (75% male) were evaluated in 2007. The majority (71%; 404) of the preschoolers received a primary developmental diagnosis, and 22% (126) a primary behavioral diagnosis. Of the 404 children with a primary developmental diagnosis, 18% (74) had a co-morbid behavioral diagnosis. Of the 126 children with a primary behavioral disorder, 25 % (31) had a co-morbid developmental diagnosis. 114 children (20% of the population) were prescribed medication for behavioral disorders, including ADHD, disruptive behavior disorder, and behavior disorder- NOS. Behavioral diagnoses and associated medication use increased with age. Stimulants comprised 77% of prescribed medications. 45% of the total prescriptions were for long acting stimulants. Conclusion: In preschool children with developmental concerns, developmental and behavioral co-morbidities such as speech/language disorders and ADHD should be considered when developing intervention plans. In this population of preschool children, 1 out of 5 children was medicated for behavioral concerns. Stimulant medications were the most frequently prescribed, with long acting stimulants accounting for 45% of prescriptions written.

Abstract 64

Social Relationships in College Students with Asthma

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Purpose: The purpose of the study was to expand upon the extant asthma literature by examining social difficulties and health-related quality of life (HRQOL) in college students who self-identified as having childhood-onset asthma as compared to healthy controls. Methods: Participants were matched on age and gender included 104 college students who were recruited through an online chronic health screener at a large Midwestern University. Participants were between the ages of 17 and 30 (M=20.13). The majority were female (73.10%) and Caucasian (80.80%). Participants completed a demographic form, the Dating Anxiety Scale for Adolescents (DAS-A), the Fear-of-Intimacy Scale (FIS), and the SF-36 Health Survey (SF-36). Results: Results showed that DAS-A was a significant

predictor of mental (ß= -.191, p<.05) and physical HRQOL (ß = -.208, p<.05) and FIS was a significant predictor of mental HRQOL (ß = -.199, p<.05) for individuals with and without asthma. Moreover, females with asthma evidenced greater overall dating anxiety than males, t(102) = -2.40, p<.05. This effect was driven by distress related to dating the opposite sex, t(102) = -2.94, p<.01, and fear of negative evaluation, t(102) = -2.06, p<.05. Conclusion: The study suggests that social relationships impact HRQOL and that gender differences exist among dating anxiety in college students with asthma.

Abstract 65

Evaluating Developmental Screening Using the PEDS and M-CHAT

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Purpose: The American Academy of Pediatrics (AAP) recommends developmental screens at specified visits and specific ASD screening at 18 and 24 months. Among the screens on the AAP Policy list are: Parents Evaluation of Developmental Status (PEDS), which elicits parents' concerns in developmental-behavioral domains and sorts children into risk status, and the Modified Checklist for Autism in Toddlers (M-CHAT), a parent completed screen for an ASD. This study evaluates the performance of a general developmental screen and an ASD specific screen when both are administered in settings including primary care and developmental behavioral pediatrics. Methods: Scores for the PEDS and M-CHAT were abstracted by retrospective chart review from 7 primary care clinics and one developmental behavioral center. Subjects were between 15 months to 3 years of age. M-CHAT failures were dichotomized to "critical" and "non-critical" failures. Parents' concerns on PEDS were categorized by developmental-behavioral domains as well as PEDS results. PEDS referral pathways were analyzed for critical failures on the M-CHAT. Results: Of 913 subjects with PEDS and M-CHAT tests, 155 patients had an M-CHAT failure. Of those, 62% had significant concerns on the PEDS. Critical fails contributed to 37% of the failed M-CHATs and were more likely to require further screening or be referred for further testing, as a result of the PEDS pathways algorithm (OR 6.8, CI 2.9, 15.8). Concerns on domains within the PEDS predictive of a critical M-CHAT failure included expressive language (OR 7.8, CI 3.5, 17.2), fine motor (OR 5.9, CI 2.6, 13.4), behavior (OR 5.56, CI 2.7, 11.4), and school (OR 2.3, CI 1.1, 4.9). No significant differences were found in gender, age, or type of practice. Conclusion: When referrals or additional screening were indicated by PEDS, critical failures were more common on the M-CHAT. As expected, expressive language was a predictor for a critical fail on the M-CHAT, as it is one of the core symptoms of an ASD. Other PEDS domains predicting a critical fail include fine motor, behavior, and school. In evaluating these screens used in both the primary care and subspecialty settings, the M-CHAT does not detect all of the concerns that the PEDS detects, nor does the PEDS detect all failed M-CHAT screens, supporting the need for both general developmental screens and ASD specific screens in this age range.

Abstract 66

Children with Type I Diabetes: Family Environment and it's Relationship to Socially Desirable Responses on Measures of Anxiety

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Purpose: The long-term effects of the anxiety experienced by children with chronic illness places them at risk for psychological and social adjustment difficulties (Pless & Nolan, 1991). Thus, while anxiety has been noted in children with Type I Diabetes, the ability to accurately measure anxiety within this population remains obscure. Methods: 51 children with various ethnic backgrounds between the ages of 7 and 12 (55% female) were assessed at the Loma Linda University Childrens Hospital Pediatric Diabetes Center. Anxiety was measured using the Revised Children's Manifest Anxiety Scale. Parents of the participants completed the Family Environment Scale and a brief demographic questionnaire. All testing was completed during routine appointments at a multidisciplinary pediatric diabetes health team clinic. Results: Preliminary findings reveal that 52% of the total sample had significant scores on the Lie Scale of the RCMAS. The Lie Scale has been shown, for children in this age range, to reflect the desire to portray socially desirable responses. Bivariate correlations were conducted between the Lie scale on the RCMAS and the 10 subscales of the FES. A positive correlation was found between the lie scale and the families perceived achievement orientation, r=.44, p=.001 and a negative correlation between the lie scale and the families perceived moral and religious emphasis, r=-.33, p=.02. Conclusion: These preliminary findings suggest that families who were perceived as more achievement oriented and to have less of a moral and religious emphasis were more likely to have children whose response style on the RCMAS was marked for social desirability. These results suggest the importance of identifying children whose concern for 'desirability' may be precluding acccurate clinical assessment of anxiety or other psychological concerns. In addition, this study promotes the need to more comprehensively evaluate family factors and their potential interaction with psychological status in this at-risk population.

Abstract 67

Clinical Correlation of the Neurodevelopmental Risk Examination and the Cognitive Adaptive Test/Clinical Linguistic and Auditory Milestone Scale (CAT/CLAMS) scores in Extremely Low Birth Weight (500-750g) and Very Low Birth Weight (750-1000g) Infants at 12 months and 24 months.

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Purpose: The purpose of this study was to examine the association between the Neurodevelopmental Risk Examination (NRE) and the Cognitive Adaptive Test/Clinical Linguistic & Auditory Milestone Scale (CAT/CLAMS) at 12 months adjusted age and at 24 months chronological age. A second aim was to determine whether extremely low birth weight (ELBW, 500-750g) differed from low birth weight (LBW, 751-1000g) babies on the NRE. Methods: Patients discharged from the NICU between 2/03 and 12/06 were studied. Of 62 ELBW patients discharged within that time period, 20 met criteria for the study. Of 101 LBW patients, 25 met criteria. Assessments on the NRE subscales were dichotomized as either normal or suspect/abnormal, and the overall NRE results were classified as either low risk or moderate/high risk. Results on the CAT and CLAMS were dichotomized as normal development vs. delay (mild, moderate, severe). The Fisher's exact test was used to examine all associations. Results: No significant associations were found between overall results on the NRE exam and the CAT/CLAMS at 12 and at 24 months. Although a suspect/abnormal neurodevelopmental NRE subscale was associated with a 2-fold increased likelihood of a delayed CAT score at 24 months, this was not clinically significant. No significant associations were found between birth weight and results of the NRE examination. Conclusion: The NRE may not be as accurate a predictor of cognitive outcome at 12 and 24 months as previously suggested. However, this study is limited by its small sample size. Further analysis with a larger cohort is now in process. We will also determine whether NRE scores for the study population differed from those lost to follow-up. Lastly, we will examine whether participation in Early Intervention affected developmental outcome.

Abstract 68

Comparing the Ethnic Identity of Students who Pass and Do Not Pass the State Standardized Academic Assessment

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Purpose: The purpose of this study is to compare the ethnic identity of students who pass the state standardized academic assessment to those who do not. Methods: We chose174 male and female ethnically diverse middle school students who were participating in a reading intervention program in several middle schools in two large metropolitan areas in the Southwest. We administered the Ethnic Identity Scale (EIS; Umana-Taylor 2004) orally to all students in small group settings. Cut-off scores were obtained for each of three EIS subscales: Affirmation, Exploration, and Resolution. We created dummy variables for the state assessment scores using state cut-off scores to divide them into pass versus not pass categories. Pearson's Correlations between EIS subscales and assessment scores were conducted. Analysis of variance was conducted to evaluate differences between means. Results: State assessment scores were positively correlated with the EIS Affirmation subscale ($r=0.218$; $p=0.0048$), but not with the Exploration ($r=0.052$; $p=0.506$) or Resolution ($r=0.08649$; $p=0.2693$) subscales. ANOVA revealed a main effect of state examination scores on Affirmation ($F=9.79$; $p=0.0021$) scores, but not Exploration ($F=0.40$; $p=0.5294$) or Resolution scores ($F=1.48$; $p=0.228$). Post-hoc analysis demonstrated significant main effect between Affirmation scores and state assessment scores but not with Exploration or Resolution scores. Although there was no significant difference between mean scores on the Exploration and Resolution subscales, all subscales showed a trend toward higher scores for students who passed the state assessment. Conclusion: We conclude that students who pass the state standardized assessment have stronger affirmative feelings toward their ethnic group compared to students who do not pass. It appears that state examination results do not correlate with whether or not a student expresses interest in exploring their ethnic identity or in their overall resolved feelings about their ethnic group. However, there is an overall trend toward higher ethnic identity scores for students who passed the state examination.

Abstract 69

Managing Children with Attention Deficit Hyperactivity Disorder and Dysfunctions of Sensory Processing

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Purpose: Children with Attention Deficit Hyperactivity Disorder (ADHD) are often described as having a dysfunction of sensory processing when evaluated by occupational therapists and others, prompting physicians to ask if a child with ADHD should be treated differently, given the presence of co-morbid symptoms of this sensory dysfunction (SD). We sought to determine if SD co-morbidity impacts ADHD treatment efficacy. Methods: This prospective cohort study included children (n=34, 76% males) 5-18 years of age, newly diagnosed with ADHD using the Vanderbilt Parent Assessment Scales (VPAS), teacher assessment scales, and exam in a community pediatric clinic. The Short Sensory Profile (SSP) was completed by each subject to determine SD status (present or not). Medication, behavioral management or both were offered. VPAS and SSP measures were repeated after approximately four months of treatment. Results: Twenty nine (85%) children completed the study. Twenty-seven (79%) subjects met cut off scores consistent with SD. Improvement was seen in 94% of children on repeat VPAS scores and 76% of children on repeat SSP scores. Differences in mean scores on the VPAS and SSP before and after ADHD treatment were significant for both groups ($p<0.001$). No significant differ-

ence was seen in ADHD improvement when comparing children with ADHD plus SD (n=23) to those with ADHD alone (n=6), controlling for age, gender, baseline ADHD severity, and behavioral therapy (p=0.55). Nine (31%) children with previously "abnormal" SSP scores normalized into the "typical" range after ADHD treatment. Improvement in VPAS scores was not associated with baseline SD severity (p=0.01). Conclusion: ADHD treatment was effective regardless of co-morbid symptoms of SD. In addition symptoms of SD showed significant improvement with ADHD treatment. Reports of SD by therapists or others should not discourage pediatric providers from treating ADHD symptoms: either with medication alone or in combination with behavioral therapy.

Abstract 70

Predicting Medical Adherence in Pediatric Cystic Fibrosis Patients Using the Health Belief Model

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Purpose: Cystic Fibrosis (CF) is a fatal genetic diseases that targets the respiratory and digestive systems and requires a multitude of daily treatments. Our goal was to identify variables related to childrens medical adherence and perceptions of treatment, using the Health Belief Model (HBM). Methods: Participants were 40 children from a Midwestern CF center. Participants completed questionnaires and interviews regarding their adherence to medical regimens and health beliefs related to adherence. Results: The mean age of participants was 13.8 years; 40% were nonadherent to their prescribed medical regimens. Regression findings show that perceived risk of becoming seriously ill moderated the relationship between perceived susceptibility to multidrug resistant infection and benefits of adherence; childrens report of higher perceived benefits of adhering to treatment were predicted by the childs report of susceptibility to infection and perceived seriousness of becoming ill ($p<.05$). Cues to action mediated the relationship between childrens perceived benefits and barriers to adherence to treatment regimens; patients who perceived treatment as beneficial and had more prompts to adhere reported less barriers to treatment ($p<.01$, Sobel<.01). The only HBM variables that predicted adherence using logistical regression were parent ($p<.05$) and child ($p<.05$) report of the childs personal reminders of treatment and parent report of child overall prompts to treatment ($p<.05$). Using linear regression, parent perception of child adherence was predicted by parent report of child responsibility for treatment ($p<.01$) but not theirs. Childrens report of fewer barriers to treatment was also predictive of medical adherence ($p<.01$). Conclusion: These findings indicate that child perception of illness is related to adherence and suggest the importance of assuring that children understand their vulnerability to illness worsening and related sequelae. It would be beneficial for parents and children to address treatment responsibility to increase adherence. Further research is needed to understand parents role in adherence; larger samples are needed to explore parental roles and developmental effects.

Abstract 71

Initial Validation of a New Measure of Facial Expression Recognition: Survivors of Childhood Cancer Compared to Typically Developing Children

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Purpose: Survivors of childhood cancer have documented impairments in cognitive and social functioning, including recently-demonstrated deficits in facial expression recognition. Interpretation of emotions portrayed through facial expressions is thought to be a key component of social interaction. However, assessment of facial expression recognition in survivors has been limited by a lack of valid and reliable measures. Specifically, existing measures often rely on photographs, which are difficult to standardize, do not include child faces, and have a limited number of non-Caucasian faces. The objective of the current study was to develop and provide initial validation of a new measure of facial expression recognition for children and adolescents. It was hypothesized that 1) the measure would be feasible for use with survivors of childhood cancer and typically developing children; and 2) survivors would perform more poorly on the measure than typically developing children. Methods: The measure was created using a digital technique known as Responsive Virtual Human Technology, with input modeled on Ekmans Facial Action Coding System. The resulting measure consists of a series of racially-diverse digital adolescent faces that portray low and high intensity versions of the six basic emotions (fear, anger, sadness, happiness, surprise, and disgust). Thirty survivors of childhood cancer and 30 typically developing children between the ages of 10 and 16 completed the Facial Expression Recognition Instrument (FERI), the WASI, and the DANVA2. Results: Survivors made significantly more errors on both the FERI and the DANVA2 than typically developing peers, even after controlling for significant differences in IQ. Initial validity was analyzed using Pearson correlations between the Child and Adult Faces subscales of the DANVA2 and the FERI, with analyses suggesting adequate validity. Conclusion: Results confirm initial validation of the FERI as a new, standardized method of assessing facial expression recognition in survivors of childhood cancer. This measure will provide more detailed information about this deficit in survivors, and could be modified for use as a social skills intervention.

Abstract 72

The Association of Parenting Capacity Variables to Depression and Anxiety in Children with Cancer

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Purpose: This preliminary study examined the association between children's depressive and anxious symptoms and three discrete parenting capacities: parental overprotection, perceived vulnerability, and parenting stress. Methods: Participants for the current study included 30 parents and children currently on-treatment for pediatric cancer. The following measures were administered and evidenced good internal consistency: Parental Protection Scale (PPS), Child Vulnerability Scale (CVS), Parenting Stress Index (PSI), Childrens Depression Inventory (CDI), and Revised Childrens Manifest Anxiety Scale (RCMAS). Results: T scores were first calculated for both the CDI and RCMAS. Results from correlational analyses revealed that PSI [$r(29) = .60$, $p < .001$] and PPS scores [$r(28) = .42$, $p = .022$] were significantly correlated with CDI scores. However, CVS was not significantly correlated [$r(29) = .34$, $p = .062$] to CDI scores. Examination of the RCMAS indicated that 7 children had invalid profiles due to an elevated Lie scale. As such, only RCMAS data from a subset of the sample could be analyzed ($n = 18$). Results revealed that none of the parenting capacity variables were significantly correlated with RCMAS scores. A regression was conducted with CDI scores as the dependent variable and parenting capacity variables as the independent variables. Results revealed that PSI scores [$B = .45$, $p = .016$] was a significant predictor of childrens CDI scores. PPS [$B = .24$, $p = .196$] and CVS scores [$B = .07$, $p = .703$] were not significant predictors. Conclusion: Results from the current study indicate that childrens internalizing symptomatology is related to specific parenting variables. It appears that symptoms of depression may have a more salient association with parenting stress and overprotective parenting than symptoms of anxiety. Future research should further examine the relationship of these parenting variables to child internalizing symptomatology in addition to other adjustment outcomes.

Abstract 73

Psychosocial Functioning in Children with Neurofibromatosis Type I

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Purpose: Children diagnosed with neurofibromatosis type 1 (NF1), a genetic disease, often present with neurocognitive and social deficits as a result of their disorder, which limit their quality of life. Limited research, however, has explored those factors that may underlie the psychosocial deficits in this population. As such, the current study aims to identify these factors. The objective is to assess facial expression recognition (FER) in pediatric NF1 patients as compared to a control group of typically-developing peers. It is hypothesized that 1) children with NF1 will make significantly more errors on a FER task and exhibit more psychosocial deficits in than typically-developing peers; and 2) deficits in FER will be associated with poorer psychosocial functioning and cognitive impairment. Methods: Twenty participants diagnosed with NF1 and 20 typically-developing peers, ages 8-17, were recruited for this study. All children completed the DANVA2 (a measure of FER), the WASI, and the PedsQL. Parents completed the Child Behavior Checklist, the PedsQL, the Emory Dyssemia Index (a measure of nonverbal behavior) and the Connors 3-Short Form (a measure of inattention). Independent sample t-tests were performed on the full set of psychosocial measures, comparing scores of the NF1 sample to the control group. Correlation analyses were completed to assess associations between FER and psychosocial and cognitive functioning. Results: Preliminary results indicate that children with NF1 made significantly more errors on the DANVA2 than controls. Children with NF1 also had more self- and parent-reported deficits across psychosocial domains. Further, results revealed a significant association between deficits in FER and parent-reported psychosocial and cognitive functioning. Conclusion: These findings confirm the presence of psychosocial deficits in children with NF1 and suggest they may be related to deficits in FER. By better understanding the underlying causes of psychosocial impairment in children with NF1 research can then begin to explore potential avenues of intervention to help improve the quality of life in this population.

Abstract 74

Collaborative Care Model: Exploring the Relationship between Co-Location of Behavioral Health Services within Pediatric Primary Care and Pediatric Outcomes.

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Purpose: Three-quarters of children seen in primary care have behavioral and mental health symptoms and 15-20% of children in primary care carry a mental health diagnosis. Co-location of behavioral health consultants with pediatricians enhances collaboration in the assessment and treatment of pediatric behavioral and developmental disorders. Goals of collaboration include: facilitating earlier detection of disorders, improving patient access to services, and improving primary care physicians' ability to make diagnoses and initiate treatment. Objectives were to (1) develop a method to evaluate collaborative care services, (2) identify levels of collaboration between behavioral health and primary care providers, (3) describe characteristics of collaboration between providers,

and (4) relate collaborative care to pediatric and health system outcomes. Methods: Patient records of 77 children under age 4 at time of initial behavioral consultation were reviewed. Descriptive measures of collaboration, as well as pediatric and health system outcomes were abstracted. Levels of collaborative care were coded based on services received. Results: In the study group, 9.1% received parallel delivery of services, 2.3% received informal consultations, 49.4% received formal consultations, 14.3% had co-provision of care, and 24.7% received services through collaborative networking. Data analyses examined pediatric and health system outcomes for each level of collaborative services. Results indicated that with more intensive collaboration there was an increased likelihood of a new behavioral or mental health diagnosis and a greater tendency for receiving behavioral and mental health services. Conclusion: A theoretically derived coding system for determining the extent of collaborative care was developed and used to describe levels of collaboration between behavioral health and primary care providers, and relate them to pediatric and health system outcomes.

Abstract 75

Predicting Maternal Distress over One Year of Treatment for Childhood Cancer

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Purpose: To examine the continuity of symptoms of anxiety and depression over one year among mothers of children with cancer, as well as coping, demographic, and disease factors that affect this association. Methods: Mothers of children with cancer (ages 5-17) were recruited to complete measures at one month (T1) and 12 months post-diagnosis or relapse (T2). Of 85 eligible families, 77 participated at T1 (91%) and 53 participated at T2 (82%; 12 children died). At T1, mothers were on average 36.89 years old (SD = 7.57), and 92% were Caucasian (n = 71). Mean time since diagnosis or relapse was 1.82 months; 19% had relapsed (n = 15). Mothers completed a demographic questionnaire, Beck Depression Inventory, Beck Anxiety Inventory, and Responses to Stress Questionnaire (RSQ), which assessed three types of coping: (a) primary control engagement (i.e., problem solving, emotional expression, emotional modulation), (b) secondary control engagement (i.e., cognitive restructuring, positive thinking, acceptance, distraction), and (c) disengagement (i.e., avoidance, denial, wishful thinking). Results: Average symptoms of anxiety and depression fell in the normal range at T1 and T2. Depression ($r = .70$, $p < .001$), anxiety ($r = .54$, $p < .001$), primary control coping ($r = .41$, $p < .01$), secondary control coping ($r = .75$, $p < .001$), and disengagement coping ($r = .61$, $p < .001$) were stable over one year. T2 depression was correlated with primary and secondary coping at T1 and all three types of coping at T2, while T2 anxiety was correlated with all three types of coping at both T1 and T2. T1 coping did not moderate the association between anxiety or depression at the two time points. Demographic and disease factors were unrelated to distress at one year. Conclusion: Maternal distress was limited and quite stable over one year of children's treatment for cancer. Early coping strategies did not influence the stability of symptoms over time, but more proximal coping strategies appeared important. Future research should include multiple informants and more frequent assessments to help identify subgroups of mothers at risk for distress, as well as factors that may promote resilience during their child's treatment.

Abstract 76

The Influence of Internalizing Symptoms on Longitudinal Medication Adherence Among Pediatric Renal and Liver Transplant Recipients

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Purpose: The purpose of the current investigation is to examine the trajectory of medication adherence among transplant recipients and the relationship between internalizing symptoms and longitudinal medication adherence. Methods: Children who were (a) a renal or liver organ transplant recipient, (b) between the ages of 7 and 18, (c) at least six months post-transplant, (d) spoke English as the primary language, (e) did not have a developmental delay and (f) and had a primary caregiver who provided informed consent were eligible to participate. The final sample for the current study consisted of 55 children (mean age = 13.3 years, SD = 3.7 years) at least six months post-solid organ transplant (32 liver transplantations, 23 kidney transplantation). Adherence to prescribed medication regimens was measured using the Medication Events Monitoring System (MEMS) TrackCap (mean days of monitoring = 89.71). Internalizing symptoms were assessed using parent- and child-report behavioral questionnaires. Multilevel modeling techniques were used to examine longitudinal medication adherence and its relationship to reported internalizing symptoms. Results: Intraclass correlation coefficients (ICCs) for the null model was as follows: day ICC = .452; week ICC = .096; participant ICC = .452. Medication adherence varied widely post-transplantation and typically decreased over time (mean adherence = 77.1%, .21% decrease for each successive day of measurement). Children who reported higher levels of state-anxiety demonstrated better medication adherence (3.2% increase in adherence per one unit increase in child-reported state anxiety). In addition, children with minimum and mean levels of self-reported anxiety demonstrated declining medication adherence over time, whereas children with maximum levels of anxiety demonstrated no decline in adherence. Parent-and child-reported depressive symptoms and parent-reported anxiety did not account for a signficant proportion of variance in medication adherence. Conclusion: The current study demonstrates the importance of accounting for repeated measures when examining medication adherence. In addition, the current study suggests that internalizing symptoms can affect medication adherence post-transplantation. Clinicians and researchers should consider which behaviors or cognitions related to anxiety symptoms may be beneficial to medication adherence.

Abstract 77

Attributions of Responsibility for Daily Medication Adherence in Children with Asthma

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Purpose: The purpose of this study was to investigate the relationship between parent and child attributions of responsibility for medication adherence in children with asthma. Methods: Twenty-nine parent-child dyads in which the child had a diagnosis of asthma and was prescribed a daily controller medication participated in the study. Children were between 8 -17 years of age (M = 11.2 years, SD = 2.1). Questionnaires were completed by parent and child to assess who was considered to be most in charge of medication adherence. Further, data on whether the parent engaged in adherence-supporting behaviors (i.e., reminding, administering, watching, and asking) were collected from the perspective of the parent and child. Results: A significant inverse correlation between age of the child and number of adherence-support endorsements was found ($r = -.487$, $p = .004$); however, the number of intradyad agreements were not significantly related to endorsements or age. Specifically, intradyad agreement about who is most in chargeof the childs medication adherence was 82% (63% Parent; 19% Child). Intradyad agreed-endorsements of adherence-supporting behaviors usually carried out by the parent were: 69% Remind, 24% Watch, 21% Administer, and 69% Ask. Conclusion: There was a high level of agreement regarding attributions of responsibility for child adherence to daily asthma medication, suggesting well-defined behavior roles for this sample. Parents appear to engage in asking and reminding the child about taking medication more often than giving the medication or watching the child take the medication. Parents perform significantly fewer adherence-supporting behaviors as children get older. Although this finding is consistent with expected developmental increases in independence, given the well-documented trend of reduced adherence in adolescence, it raises questions about the role of parents supportive behaviors in the adherence of older children. It is possible that reduced support from parents may play a critical role in the rise of non-adherence with adolescence, a relationship that deserves further consideration.

Abstract 78

Positive Outcomes in Siblings of Children with Developmental Disabilities and Chronic Illnesses

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Purpose: Research demonstrates that having a sibling with developmental disability/chronic illness (DD/CI) puts an otherwise healthy sibling at risk for psychological adjustment difficulties. However some positive effects, such as increased compassion and tolerance have also been hypothesized. This study sought to identify positive outcomes for siblings of children with DD/CI and suggests the need for further research into predictors of positive/negative influences. Methods: Data on 34 siblings of children with DD/CI were examined. Diagnoses of the children with DD/CI included physical disabilities, cognitive disabilities, and psychiatric disorders. Healthy siblings were 4-13 years of age, with a mean of 7.91 years. Parents completed the Child Behavior Checklist and a parental report measure designed by the authors, the Positive Impact Scale. The PIS included 9 items rated on a likert scale (i.e., 0-2) which was designed to measure the positive impact a sibling with DD/CI has on his/her healthy sibling in the following areas: personality/mood, strength of character, compassion/understanding, self-esteem, personal independence, household responsibility, child care responsibility, recreational activity, and relationship with peers. Results: Chi-square analyses revealed that a significant proportion of parents answered that the healthy sibling's strength of character, compassion/understanding, personal independence, and child care responsibility/abilities had been positively affected by their sibling with DD/CI. Further, T-tests of the siblings' CBCL revealed that the siblings were not rated by their parents as getting along any better with their brother/sister with CI/DD than the healthy normative sample. Conclusion: Results suggest that it is not merely the healthy sibling and brother/sister with DD/CI pair that gets along the best that leads to the most positive outcomes for the healthy sibling. It also suggests that the results do not simply reflect a parent's optimistic view of their children. These results call for further study into the quantitative identification of positive effects on a healthy sibling and the predictors of these effects.

Abstract 79

Sibling Support of Pediatric Diabetes Management: Relations to Adherence, Glycemic Control, and Quality of Life

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Purpose: Most "family" research on children with type 1 diabetes has focused on parents or general family functioning, with little focus on the role of siblings as a support or barrier to effective diabetes management. This study examined the role of sibling support in pediatric diabetes management. Methods: Thirty children(mean age = 11 years; 54% male) with type 1 diabetes participated

in an ongoing study on sibling support. Their siblings (mean age = 13 years) were 49% male, with 66% older than the child with diabetes. Sibling relationship quality and support for diabetes care, general and diabetes-related quality of life, and adherence were assessed with standardized questionnaires/interviews. Most recent HbA1c, a measure of glycemic control, was collected from the medical record and average number of blood glucose checks was downloaded from the child's glucometer. Partial correlations were run, with child age covaried. Results: Sibling support was associated with warmth in the sibling relationship (pr's = .52 - .75, p < .01) but unassociated with sibling conflict (all pr's, n.s.). There were trends for sibling conflict and rivalry to be associated with poorer adherence (pr = .28 & .26, p's < .21). Sibling support was unrelated to self-reported adherence, but was positively associated with adherence, as measured by glucometer data (pr = .35, p < .06). Children with poorer glycemic control reported receiving more diabetes-related support from their siblings (pr's = -.25 - .35, p's = .05 - .17). Sibling conflict was associated with poorer general quality of life (pr = .39, p < .05) , while warmth was associated with decreased worry about diabetes (pr = -.30, p < .10). Conclusion: This study provides a preliminary look how sibling relationship variables, including perceived support of adherence, relates to diabetes-related outcomes. A complicated picture emerges in which children with poorer glycemic control report greater help from siblings in managing their diabetes, but with sibling conflict also associated with poorer outcomes. Continued data collection will allow for greater power to examine potential moderators, including birth order and same-sex vs. opposite-sex dyads. Examination of sibling influences will allow for richer models of the role of family in pediatric diabetes management.

Abstract 80

Healthcare Needs of Children with Down Syndrome and the Impact of Health System Performance on Families

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Purpose: To assess the U.S. healthcare system's success in meeting healthcare needs of children with Down syndrome (DS), as well as the functional, financial, and social impact of their medical conditions and care on their families. Methods: Data from the CDC/National Center for Health Statistics' 2005-2006 National Survey on Children's Health were analyzed. The families of 40,000 children age 0-17 years with special healthcare needs (SHCN), including 400 with DS, were interviewed by telephone. Results: Compared with the entire sample of children with SHCN, children with DS were much more likely to have 4 or more health conditions (42.2% vs 10.6%), health conditions were more likely to affect daily activities (73.4% vs 21.0%), and children were more likely to have 4 or more functional difficulties (78.6% vs 27.1%). Children with DS were less likely to receive comprehensive care within a medical home (29.7% vs 47.3%), more likely to have not received all needed care coordination (56.2% vs 31.5%), more likely to report unmet needs for specific health services (38.1% vs 15.0%), and youths were less likely to receive services necessary to make appropriate transitions to adult healthcare, work, and independence (13.7% vs 41.5%). Impact on families was also great, as indicated by larger numbers in the DS group requiring families to cut back or stop working (55.1% vs 23.5%), provide >11 hours per week providing healthcare to their children (30.2% vs 9.5%), or have financial problems due to their child's health needs (36.4% vs 17.9%). Conclusion: Families of children with DS report more problems in meeting all their children's health needs compared to a SHCN population. These findings suggest that while the multiple medical conditions commonly seen in individuals with DS are, for the most part, well-recognized and treatable, there persist substantial barriers to appropriate care for children with DS and their families, who appear to be burdened disproportionately.

Abstract 81

How Do Parents Make Decisions About Analgesic Use? Examining the Impact of Child Age and Parent Gender in a Community Sample

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Purpose: Exposure to painful experiences is common for children. Understanding how caregivers make decisions about treating their childs pain can be informative for health care professionals. Characteristics of both child and parent may influence what medications are used and how often medications are given. The current study examines how gender and age influences parents decision making about pharmacological and nonpharmacological methods for treating childhood pain Methods: Data is being collected using a community sampling technique. Students enrolled in a psychology course are recruiting parents of children to complete an online survey. Currently, four hundred parents (M age = 36.54, SD = 7.52), of children ages 1 to 8 (M = 4.75, SD = 1.90), have participated. Participants were predominantly Caucasian (85%) and half of the children in the sample were boys. Parent responders were predominantly mothers (65%), high school educated (years: M = 11.97, SD = 3.17), and had families consisting of multiple children (M = 3.22, SD = 1.09). Ongoing data collection will also provide information on parent of adolescents, allowing for age comparisons in the final paper presentation. Results: Preliminary findings indicate that overall pain management techniques are similarly used by both mothers and fathers with a few interesting differences. Mothers were more likely to give baths, rub/massage, provide comfort, and use ice. In contrast, fathers were more likely to tell their child to suck it up. Mothers were also more likely to give pain medication when their child asked for it, when increased activity was planned, and were more likely to use an alternative approach instead of analgesics.

Parents were more likely to withhold pain medications from their daughters because they did not think they were actually in pain and because they thought the pain was stress related. Parents also reported using distraction more often with daughters. Conclusion: These preliminary results support the previous literature and provide new insight into how community parents make decisions about child analgesic use. Future research should compare parent decision-making across clinical and non-clinical populations. This research will provide health care professionals with information to target parents misperceptions about child analgesic use.

Abstract 82

How Do Teachers Work with Parents and Clinicians about Urban Children with ADHD?

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Purpose: Anecdotal evidence suggests that collaboration among parents, clinicians and teachers is sub-optimal during the diagnosis and ongoing management of children with ADHD. To our knowledge there are no published data regarding teachers' experiences and expectations of communication and collaboration among these groups in caring for urban children with ADHD. Methods: This is a qualitative study of teachers of urban children with ADHD. We recruited teachers who are involved in caring for children with ADHD in a single large urban school district. We conducted in-depth qualitative interviews to elicit experiences and expectations of collaboration among teachers, parents and clinicians regarding the care of children with ADHD. We used open coding to generate initial codes, categories, and themes for preliminary analysis. We used thematic analysis to investigate relationships among themes. Results: Nine teachers completed interviews. All were female with a median age of 33. Themes included positive teacher attitudes towards collaboration between themselves, parents and clinicians. Teachers identified several barriers to collaboration within these groups as well as on a system level, such as cultural factors, competing priorities, and lack of ADHD knowledge. Breakdowns in collaboration occurred when clinicians and teachers held different perceptions of their responsibilities and when clinician, parents and teacher beliefs regarding the diagnosis and treatment process were discordant. The teachers described parent involvement ranging from passive to highly active, with focus on the emotions that parents feel during the process of diagnosis and management. Teachers also identified strategies that they felt would improve collaboration, including methods to foster relationships between groups and to create regular, systematic methods of communication. Conclusion: Teachers identified a range of barriers and proposed several methods to improve collaboration with parents and clinicians around ADHD care. This study adds to our understanding of barriers to collaboration and may help to guide strategies for improving community collaboration for ADHD care.

Abstract 83

Healing Touch Shows Potential Stress Mitigation in Ill Neonates.

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Purpose: Investigate Healing Touch stress mitigation potential in ill neonates and feasibility for further study. Methods: Study Design: Neonates, requiring ventilator support or gavage tube feeding, were enrolled in the first 7 days of life. 13 subjects were studied each for 8 consecutive days - 1 baseline study session and 7 days with 2 study sessions each. Subjects were randomized to two groups - treatment and control - stratified for illness severity; all were mild-moderate illness severity. Each study session included defined baseline state and consecutively pre-stressor, specified stressor (nursing cares) and recovery. During recovery for all subjects, a standard, individualized program of care for stress management was provided for all study sessions. Healing Touch was also provided to the treated subjects for ONE study session each day. Data collected throughout all study sessions: Physiological [HRV, HR, O2 saturation] and Behavioral state and cues. Numerous additional background and potential outcome measures were collected. Result of Heart Rate Variability is presented here as the most reflective of adaptability maturation in responding to stress. Data Analysis: Heart period (HP) and respiratory sinus arrhythmia (RSA) data (using Porges' MXEdit to calculate the index of vagal tone) were analyzed. Correction for daily baseline differences was made before comparisons were done using pre-stressor, stressor and recovery time segments. All results are descriptive due to small population size. Results: HP and RSA decreased during the stressor and recovered toward baseline levels in both groups. Within the treated group RSA decreased less in HT+SOC than SOC alone [effect size .43; expected sample size 17]. RSA decreased less in the treated group (HT+SOC condition) than in the control group [effect size .40; expected sample size 196]. Effect size comparison showed stronger treatment effect days 6-8 (results given) vs days 2-8. HP decreased less in the treated group (similarly in both conditions) than for the controls. Conclusion: Healing Touch shows potential for stress mitigation in ill neonates and is uniquely suited to this fragile population. Future study is warranted.

Abstract 84

Observed Father Negativity and Positivity and Child Externalizing Problems: SES and Ethnicity as Moderators

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Purpose: A number of studies report associations between parental hostility, warmth, and child externalizing and internalizing behaviors. These studies often include self-report data from fathers and mothers to test for the effects of parent gender on positive and negative parenting behaviors on children's adjustment behaviors. The problem is that fewer studies fail to emphasize the uniqueness of associations between father negativity and positivity and their child adjustment behaviors. Additionally, few studies tend to compare fathers and mothers in ethnic families and more fail to address the underlying processes that are associated with parents' feelings and their children's adjustment difficulties. To address these problems, this study examined the associations between observers' ratings of father negativity and positivity and parent-rated child externalizing and internalizing problems in an ethnically and socioeconomically diverse sample of 6-10 year old boys and girls. Methods: We used bivariate correlations to examine the relationship between fathers' positivity and negativity and their children's externalizing and internalizing behaviors. We also computed hierarchical regression equations predicting externalizing and internalizing problems by fathers' positivity, negativity, socio economic status, child gender, and ethnicity. Results: The results suggest an association between fathers' negativity and children's externalizing problems moderated by family ethnicity and SES. There was a modest positive association, but only for middle-SES Caucasian fathers. A similar, albeit non significant, pattern was found for the link between father negativity and child internalizing problems. Conclusion: The results suggest potentially powerful socio-economic and ethnic variation in the processes linking observed aspects of paternal behavior and children's maladjustment in middle childhood that might be taken into consideration by professionals working with children from diverse backgrounds who exhibit externalizing and internalizing behaviors.

Abstract 85

Informant Discrepancy in Cystic Fibrosis: Comparison between Child, Parent and Physician Report

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Purpose: The present study evaluated whether informants: children with cystic fibrosis (CF), parents, and physicians, differ in their reports of overall and specific adherence to medical treatment. Because small sample size and non-normal distribution limit the creditability of traditional analyses, this study contributes to the research by evaluating data with a non-normal approach, bootstrapping. Bootstrapping simulates the process of repeatedly sampling without restriction of a sampling distribution. Methods: Participants were 33 children between the ages of 9 and 17 years diagnosed with CF. Questionnaires were collected from children, parents, and physicians during outpatient visits to a CF Clinic. Results: Generalized Estimating Equations (GEE) model with bootstrapped standard errors, found significant differences between informant type and medical treatment adherence behaviors, chi(23)= 121.91, p= 0.00. Paired-sample T-tests compared perceptions of global adherence ratings as well as specific adherence behaviors between: 1. child versus parent report, 2. child versus physician report, and 3. parent versus physician report. There was a significant difference between child versus physician reports of aerosol antibiotic adherence (Z = 2.12, p = .03), with children more likely to rate themselves as adherent, and oral antibiotic adherence (Z = -2.35, p = .01), with physicians more likely to rate children as adherent. There was a significant difference between parent and physician report of oral antibiotic adherence (Z = -2.44, p = .01), with physicians more likely to rate children as adherent, and airway clearance adherence (Z = 1.89, p = .05), with parents more likely to rate children as adherent. Conclusion: Findings that physicians were more likely to rate children as adherent than children or parents suggest physicians are basing their appraisal on physical status, rather than actual adherence behaviors, and may affect prescription practices. These findings suggest the need for research with behavioral measures of adherence and raises questions about how to assess adherence and evaluate the need for changing medical management decisions.

Abstract 86

An Open-Label Pilot Study of Transdermal Methylphenidate in Children With Autism Spectrum Disorders, Inattention, Hyperactivity, and Impulsivity.

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Purpose: In this study we examined outcomes related to core ADHD symptoms, a general measure of problem symptoms, and two measures that elicit signs of functional improvement in children with symptoms of both Autism Spectrum Disorders(ASD) and Attention-Deficit/Hyperactivity Disorder(ADHD). Methods: 14 boys and 2 girls, ages 6y5m to 11y4m(mean=7y10m)with autism by history,confirmed by GARS-2(Autism Index range 70-130, mean=101) and who met DSM-IV AHDH criteria A,B,C&D, but not E(which excludes ASD) were enrolled in this single site, 8 wk , open label study. Transdermal methylphenidate patch(Daytrana) was titrated

from 10 mg/d at weekly intervals until the ADHD-RS in normal range or there were unacceptable side effects. Dosage range was 10-30 mg/d(mean=19 mg). The patient's ADHDRS-IV and Aberrant Behavior Checklist(ABC) were obtained at each visit. The Life Participation Scale for ADHD (LPS) and the Pediatric Evaluation for Disability Inventory (PEDI) were obtained at the start of treatment and at study completion. Statistics: General linear model repeated measures of SPSS. Intent to treat with last value carried forward for child who did not complete. Results: 15 children completed trial. One patient had exacerbation of a pre-existing tic disorder and disenrolled after 2 weeks of therapy. There was significant reduction in parent reported ADHDRS-IV Inattention from 20.13+3.42 (mean + s.d.)to 8.81+5.91 ($p<0.001$), Hyperactivity/Impulsivity from 19.75+5.25 to 6.69+5.95($p<0.001$), and Total from 39.88+7.87 to 15.50+11.02($p<0.001$). There was a reduction in ABC from 76.25+21.65 to 32.25+22.90($p<0.001$). There was an increase in participation on the LPS from 26.50+8.91 to 38.38+12.83($p<0.001$). Functional independence on the PEDI also increased in Self Care from 28.94+7.18 to 32.06+6.43($p<0.03$), Social Function from 9.25+4.95 to 14.75+6.03($p<0.001$) and Total Score from 72.56+11.54 to 81.50+11.21($p<0.001$). Conclusion: The use of transdermal methylphenidate was associated with a decrease in problem behaviors and an increase in functional behaviors in this group of children with symptoms of ASD and ADHD. The transdermal patch was well tolerated. These results suggest that larger, double-blind, studies of stimulant therapy in children who are co-morbid for these symptoms are feasible and justified. This investigator initiated study funded by Shire US Inc. Wayne, PA.

Abstract 87

Miscarried Helping in Families of Youth with Diabetes: When Helping Hurts

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Purpose: Previous research has demonstrated the psychometric properties of a measure, Helping for Health Inventory (HHI), developed to assess the negative aspect of social support (a.k.a, miscarried helping) in families of youth with diabetes. This previous research indicated that the HHI was demonstrated to be adequately reliable and valid in a sample of youth with poorly controlled diabetes (Harris et al., 2006). Methods: This report describes the findings from a factor analysis of the HHI in a sample of youth with poorly controlled diabetes and an analysis of demographic and diabetes-related factors that might differentiate families based on their responses on the HHI. As a part of a more comprehensive evaluation, 40 parents of youth with poorly controlled diabetes completed the HHI. Adolescents participating in this study had a mean age of 15.2 years (SD=1.5), mean duration of diabetes of 4.8 years (SD=3.2), and a mean baseline HbA1c of 11.0% (D=1.6%). Forty-seven percent of the youth were African-American, 56% wre female, and 44% rsided in single-parent homes. Results: An exploratory factor analysis was conducted on the 15 items of the HHI. Findings from this factor analysis indicate that the HHI has three primary factors. The three factors extracted from the factor analysis appear to measure three distinct, but inter-related components of miscarried helping including parent-child conflict around helping (8 items), parents feeling responsible for their childs health (4 items), and the parents perception of helping as either good or bad (3 items). Sixty-one percent of the variance was explained by the 15 items of the HHI. Conclusion: Based on an exploratory factor analysis, the 15 items of the HHI load on to three primary factors that assess parent-child conflict around helping, parents feeling responsible for their child's health, and the parents' perception of their helping as either good or bad.

Abstract 88

Making a Case for House Calls for Families of Youth with Poorly Controlled Diabetes

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Purpose: Recently, a diabetes-specific version of Behavioral Family Systems Therapy (BFST-D) has demonstrated improved treatment adherence and metabolic control in youths with diabetes mellitus (DM) from highly conflictual families. This was especially true for those adolescents with baseline glycosylated hemoglobin (HbA1c) e9.0%. Methods: This report presents the initial findings of a randomized controlled trial of two different applications of BFST-D in adolescents with poorly controlled DM. Adolescents and their families were randomized to receive twelve 90-minute sessions of BFST-D conducted in the familys home or at the clinic. Families completed an average of 8 BFST-D sessions. In all cases, BFST-D augmented standard medical care. At baseline and post-treatment assessments, 40 adolescents and their parent(s) completed the Diabetes Self Management Profile (DSMP), an assessment of diabetes treatment adherence. Metabolic control was determined using HbA1c values collected at baseline and post-treatment assessments. Results: Two separate ANCOVAs were performed with BFST-D application serving as the independent variable and the baseline HbA1c value and youth-reported DSMP total score serving as the covariate. From baseline to end of treatment, HbA1c for the Clinic-Based group declined by an average of 0.1%, while that for the Home-Based group declined by an average of 1.5%. ANCOVA yielded a significant between-group difference [$F(1,26) = 7.4$; $p < .012$], indicating that HbA1c improved more for the Home-Based group. From baseline to end of treatment, youth-reported DSMP scores for the Clinic-Based group increased by an average of 4 points, while that for the youth-reported DSMP scores for the Home-Based group increased by an average of 10 points. ANCOVA yielded a trend for a between-group difference [$F(1,26) = 3.5$; $p < .074$], favoring the Home-Based group. Conclusion: These findings revealed that Home-Based BFST is superior to Office-Based BFST in improving HbA1c in youths with poorly controlled DM.

Abstract 89

Does Intensive Treatment Lead to Better Results in Toddlers with Autism Spectrum Disorders (ASD)?

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Purpose: Little is known about the predictive factors for a positive response to intensive treatment in toddlers with ASD. Recommendations are from reports of clinical improvement after intensive one- to-one therapy. But in clinical practice, we sometimes see children receiving less therapy make good progress and other children make little progress despite intensive therapy. We sought to compare the developmental progress of toddlers with ASD receiving variable hours of treatment. Methods: 30 children with an ASD between 26 and 32 months are enrolled in this prospective pilot project. They were referred to a developmental clinic for evaluation of a possible ASD. All received assessments of language, autism symptoms, cognitive progress, and details of their therapies. Intensive treatment at 25 hours a week with ABA, ST and OT was recommended for all but this was not always delivered. Children are evaluated every 6 months using the Mullen Scales of Early Learning, Autism Diagnostic Observation Schedules (initial and last visits), MacArthurBates CDI and the Pervasive Developmental Disorders Behavior Inventory. Results: Currently we have Mullen results on 15 children (11 boys, 4 girls) who have at least one follow-up. These were completed an average of 9.3 months (SD = 3.1) after the initial evaluation. Mean age was 28.2 months. We examined the relation between total hours of 1:1 treatment per week, receptive language (RL) and Early Learning Composite (ELC) scores at baseline and follow-up. We assumed a linear trend in scores and calculated a slope for change in scores for each child and plotted them against hours of treatment. There was a weak positive correlation between improved ELC scores and total hours of treatment (THT) (r=.21) and a weak negative correlation between scores of RL and THT (r=.14). No linear relationship was observed between ELC or RL scores and THT. Conclusion: These preliminary data do not support the assumption that greater intensity of treatment leads to more clinical improvement in toddlers with ASD. Other factors are important in the response to treatment and must be explored.

Abstract 90

Universal Teacher Screening for ADHD Risk: Exploring Potential Utility

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Purpose: To explore the potential utility of teacher ADHD screening by examining the degree to which new cases are uncovered and the significance of positive ADHD screens in terms of persistence of clinical at-risk status, end of year adverse educational and behavioral outcomes, and use of school services prior to the introduction of a community based system of intervention. Methods: Teachers in 5 Mississippi elementary school districts used the Vanderbilt teacher rating scale, completed online, to screen all children whose parents consented. In the last two weeks of school all children screening positive for ADHD and 102 children randomly selected from initial negative screens were rescreened by the same teachers and outcome data regarding school interventions, disciplinary measures and academic progress were obtained by teacher questionnaire. A sample of 159 parents of children screening positive for ADHD symptoms were interviewed. Results: 47% of parents consented and 5,727 children were screened. 20.5% were positive for ADHD with subtypes: inattentive: 11.2%; combined: 6.2%; hyperactive: 3.1%. 77.4% of parents reported being aware of behavior or learning problems, 25.8% had received a prior diagnosis of ADHD and 13.8% we on prescription medication for ADHD. By year's end 59.7% of children initially screening positive for ADHD still met criteria. Compared to controls, children positive on the initial screen were more likely to have: academic difficulties: 72.5% v 23.3% (p = <.01); receive special services: 54.1% v 21.4% (p = <.01); disciplinary interventions:33.9% v 10.7% (p = <.01); have social problems: 30.1% v 2.9% (p = <.01). Conclusion: Screening for ADHD in elementary school using a standardized and validated teacher rating tool detects children not previously recognized. A larger proportion of children were found with inattentive type ADHD than in clinical samples and a larger percent of all children screened positive than in surveys of populations not requiring parental consent. The status of a positive screen for ADHD during the school year tends to persist and is associated with adverse academic and behavioral outcomes despite a variety of school interventions. Early intervention programs based on systematic universal teacher screening using standardized and validated rating scales with medical input may be warranted to address these predictable adverse outcomes.

Abstract 91

Does Pediatric Patient-Centeredness Affect Family Trust?

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Purpose: This study seeks to describe and measure the patient-centeredness of pediatricians as a precursor of their care behavior performance, to determine how pediatric patient-centeredness influences family trust, confidence, and the likelihood to recommend, to assess the stability of pediatricianspatient-centeredness on family trust across national random samples, and to test the hypothesized pediatric patient-centeredness models strength against competing models. Methods: All data used in this study were collected with the Press Ganey Medical Practice Survey, a widely-used self-administered standardized instrument, which captures patientsratings of their healthcare visit, including scores on physician care behavior performance. Evidence of the instruments internal consistency and construct validity has been documented. Data was collected from surveys that were mailed throughout the year to random samples of patients in each pediatric practice. The data were analyzed using structural equation modeling to detect direct effects on the desired outcome of patient trust. Results: The effect of patient-centeredness on family trust, confidence, and the likelihood to recommend the practitioner was stable across both the test and cross-validation samples. When patient-centeredness increased, family trust increased, and conversely, when patient-centeredness decreased family trust decreased. Families with high trust had more confidence and were more likely to recommend their physician and conversely families with lower trust had less confidence and were less inclined to recommend their physicians to others. The influence of gender on family trust was insignificant in both the test group and in the cross-validation group ($p = .623$, $p = .711$). Conclusion: Based on the above results and supporting evidence, we conclude that patient-centeredness is a teachable and measurable latent ability of pediatricians. Increases in patient-centeredness cause increases in family trust, confidence and the likelihood to recommend pediatricians. It also predicts family rating of pediatricians care behaviors.

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Somatic Growth Velocity and Cognitive Functioning in Young Children with Sickle Cell Disease

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Purpose: Children with Sickle Cell Disease are at elevated risk for abnormal developmental trajectories in terms of somatic growth and cognitive functioning. The purpose of this study was to examine the relationship between growth velocity and cognitive performance among young children with SCD to determine whether rate of somatic growth during early childhood might be one marker of neurocognitive risk status. Methods: Participants were 46 children with SCD, ages 4 to 8 years. Current anthropometric measurements, including body-mass-index-for-age (BMI-for-age) and height-for-age, were collected, and cognitive testing was conducted. Retrospective medical chart reviews were completed to collect growth trajectory data for each child from age 2 until the time of testing. Growth velocity curves were created, and linear slopes for height-for-age and BMI-for-age were calculated. Results: Regression analyses showed that higher BMI velocity (i.e., increases in BMI status over time during early childhood) predicted higher cognitive scores at the time of testing on measures of global cognitive ability, language ability, and visual-motor skills. Height-for-age velocity was not a significant predictor of cognitive performance; rather, results indicated that most children showed very little change in height-for-age percentile during this period of development. Conclusion: This study provides preliminary evidence that somatic growth trajectories and cognitive development are related in young children with SCD. Increases in BMI-for-age status during early childhood could be a protective factor for cognitive development in this population. Future studies should examine the efficacy of early nutritional and biomedical interventions in improving both growth and cognitive outcomes in young children with SCD.

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