Meeting of the Interagency Autism Coordinating Committee

July 9, 2013

National Institutes of Health
31 Center Drive, Building 31
C Wing, 6th Floor, Room 10
Bethesda, MD 20892

Conference Call Access:
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These slides do not reflect decisions of the IACC and are for discussion purposes only.

Meeting of the IACC

Morning Agenda

9:00 AM **Welcome, Roll Call and Approval of Minutes**
Thomas Insel, M.D.
Director, NIMH and Chair, IACC

Susan Daniels, Ph.D.
Acting Director, OARC and Executive Secretary, IACC

9:05 **Racial and Ethnic Differences in Subspecialty Service Use by Children with Autism**
James Perrin, M.D.
Professor of Pediatrics
Harvard Medical School

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Racial and Ethnic Differences in Subspecialty Service Use by Children with Autism

MassGeneral Hospital *for* Children℠

Racial and Ethnic Differences in Subspecialty Use by Children With Autism

Sarabeth Broder-Fingert, MD
James M. Perrin, MD, FAAP

Background

- African-American children receive diagnosis later than white children (Mandell et al.)
  - Later access to EI and other services
- African-American children with ASD report (Kogan et al.)
  - More delayed or forgone care
  - Less likely to have usual source of care
  - Difficulties getting needed care
  - Among those “no longer having a diagnosis,” high representation among African-American children
- Higher rates of comorbid conditions among children/youth with ASD

Partners Study of Subspecialty Use in ASD

- Children/youth with diagnosis of ASD
  - Ages 2-21 years
  - Visits from 2000-2011
- Examined rates of visits with
  - Gastroenterology(GI)/nutrition
  - Neurology
  - Psychiatry/psychology
- Laboratory and procedures
  - GI
  - EEG and neuroimaging
  - Sleep studies
  - Neuropsychiatric testing

Results

- 3,615 children and youth
  - 2,935 white
  - 243 Latino
  - 188 African-American

- Gender
  - 2879 Male
  - 736 Female

Visit likelihood (odds ratios)*

Subspecialty Visit	White	African-American	Hispanic	Other non-white
GI/nutrition	Ref	0.32**	0.32	0.56
Neurology	Ref	0.52	0.40	(0.84)
Psychiatry/psychology	Ref	0.44	0.60	0.62

*Adjusted for gender, age at visit, and insurance

***Ie, African-American children about 1/3 as likely to have GI/nutrition visit*

Selected procedures (odds ratios)

Procedure	White	African-American	Hispanic	Other non-white
GI/nutrition				
Stool studies	Ref	0.49	(1.01)	(0.73)
Colonoscopy	Ref	0.23	0.26	(0.68)
Endoscopy	Ref	0.31	0.27	0.53
Neurology				
EEG	Ref	(0.65)	0.53	(0.98)
MRI-brain	Ref	0.37	0.62	(0.99)
Psychiatry				
Neuropsych testing	Ref	(0.80)	0.55	(1.05)
Developtl testing	Ref	(1.47)	3.48	(0.61)

Summary

- Major differences by race/ethnicity in subspecialty service use

- Potential explanations
  - Differences in presentation or severity
  - Differences in physician or parent referrals
  - Differences in referral followup

Supported in part by grants from the Nancy Lurie Marks Foundation and Autism Speaks; partial support from a cooperative agreement (UA3 MC 11054) from the Health Resources and Services Administration/Maternal and Child Health Bureau to the Massachusetts General Hospital

MassGeneral Hospital for Children℠

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Morning Agenda – Continued

9:20 **Commentary on Parent-Physician Efforts to Address Wandering**

James Perrin, M.D.
Professor of Pediatrics
Harvard Medical School

9:30 **Panel on Comorbid Conditions in People with Autism**

Presenters: **9:30-9:45** **Comorbidities Among Patients Served by the Autism Treatment Network**
James Perrin, M.D.
Professor of Pediatrics
Harvard Medical School

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Commentary on Parent-Physician Efforts to Address Wandering

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Comorbidities Among Patients Served by the Autism Treatment Network

Autism Spectrum Disorder and Comorbid Conditions

James M. Perrin, MD, FAAP

Professor of Pediatrics, Harvard Medical School, MassGeneral Hospital for Children

Director, Clinical Coordinating Center, Autism Speaks Autism Treatment Network

Principal Investigator, Autism Intervention Research Network on Physical Health

These materials are the product of on-going activities of the Autism Speaks Autism Treatment Network, a funded program of Autism Speaks. It is supported in part by cooperative agreement UA3 MC 11054, Autism Intervention Research Network on Physical Health (AIR-P Network) from the Maternal and Child Health Bureau, Health Resources and Services Administration, Department of Health and Human Service to the Massachusetts General Hospital.

Autism Speaks
Autism Treatment Network

- 17 sites in North America
- Dedicated to improving care for children with ASD and their famili
- Emphasis on medical conditions among children with ASD
- Serves as the Autism Intervention Research Network on Physical Health (AIR-P)
  - Expanded clinical research
  - Efforts to improve care and disseminate findings

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AIR-P Autism Intervention Research Network on Physical Health

AS ATN Registry Data

- Much reported in November 2012 supplement to Pediatrics (open access at www.pediatrics.org)
- Registry – currently >6,300 children with data
- Supplement also includes clinical practice guidelines and network research reports

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Coexisting Symptoms and Conditions

- Gastrointestinal and nutrition symptoms and disorders
  - Variations in diet preferences and supplements
  - Motility
  - Immunology
  - Microbiome
- Epilepsy
- Sleep disorders
- Other mental health conditions

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GI Disorders

GI problem	Any past 3 months	Chronic past 3 months
Constipation	34.2%	23.9%
Diarrhea	29.4%	14.7%
Abdominal pain	26.2%	13.0%
Other GI	14.9%	11.4%
Nausea	13.6%	8.8%
Bloating	11.6%	5.2%
Any GI problem	52%	

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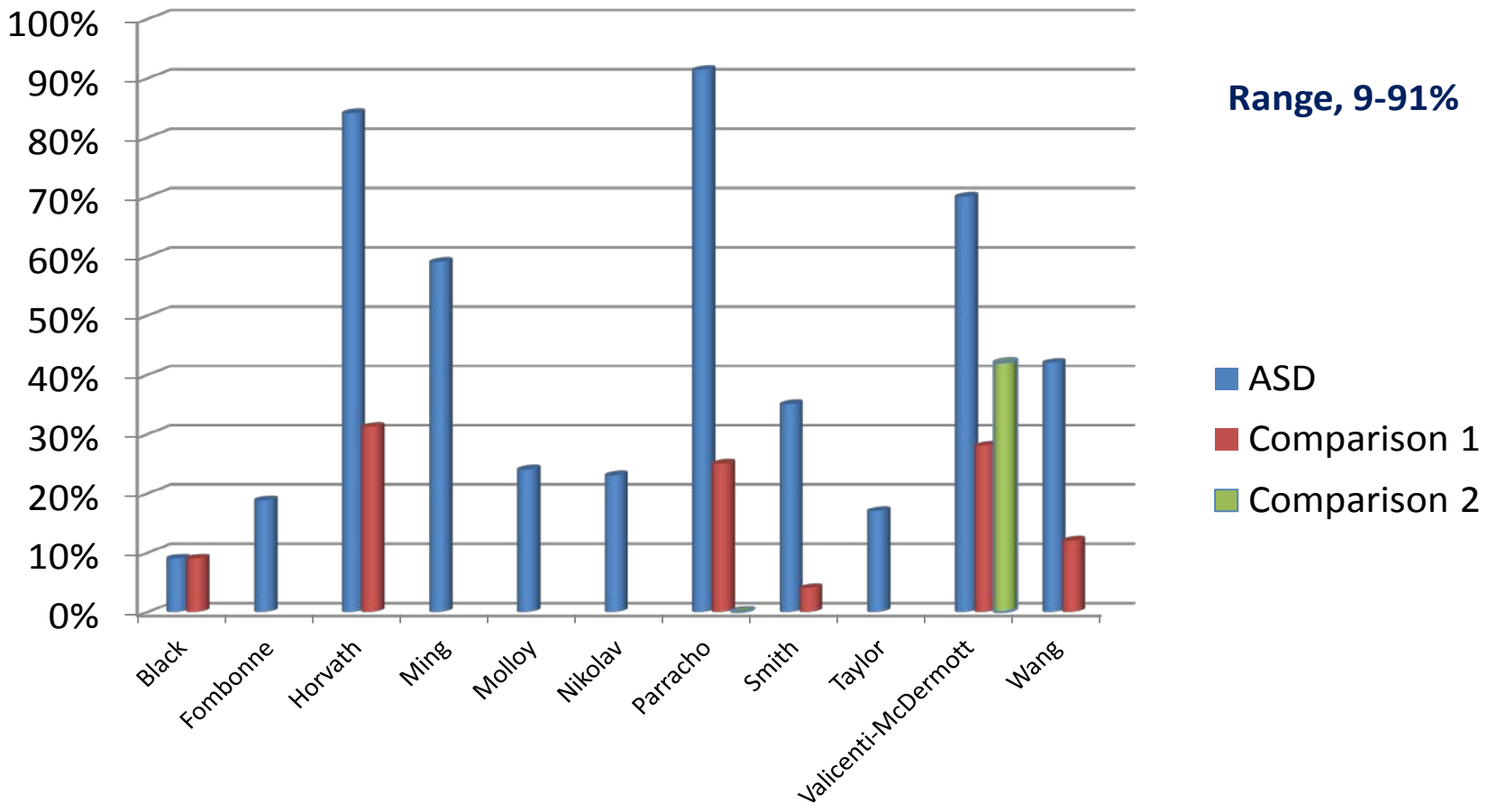
Reported Prevalence of GI Disorders in Children with ASD



Range, 9-91%

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Seizure Disorders in Children with ASD (n=2,569)

- 420 with seizures (16%)
- No differences by ASD diagnoses or gender
- Higher rates among White (p=0.01) and Latino populations (p=0.04)
- IQ difference (p=0.04)
  - Children with seizures: IQ <70 40%
  - Children without seizures: IQ <70 35%
- Parent report of skill loss (p<0.001)
  - Children with seizures: 21%
  - Children without seizures: 13%

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Seizure and Associated Findings

- Higher rates of GI problems ($p<0.001$) and sleep problems ($p< 0.001$)
- Lower Vineland adaptive scores and certain CBCL scales

Sleep Disorders

- Previous reports: 53-78% of children with ASD; 26-32% in children without ASD
- Sikora et al. (Supplement)
  - 1,193 children ages 4-10 years
    - Good sleepers – 340 (28.5%)
    - Mild sleep problems – 638 (53.5%)
    - Moderate-severe sleep problems – 215 (18.0%)
  - Lower rates in older children
  - Sleep problems associated with problems in daytime behaviors

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Psychiatric Symptoms

- Previous reports
  - ADHD in 41-78% of children with ASD
- Symptom reports from Registry (Child Behavior Checklist)
  - 37% high scores on attention subscale
  - 14% on aggressive subscale
  - 22% on hyperactivity subscale

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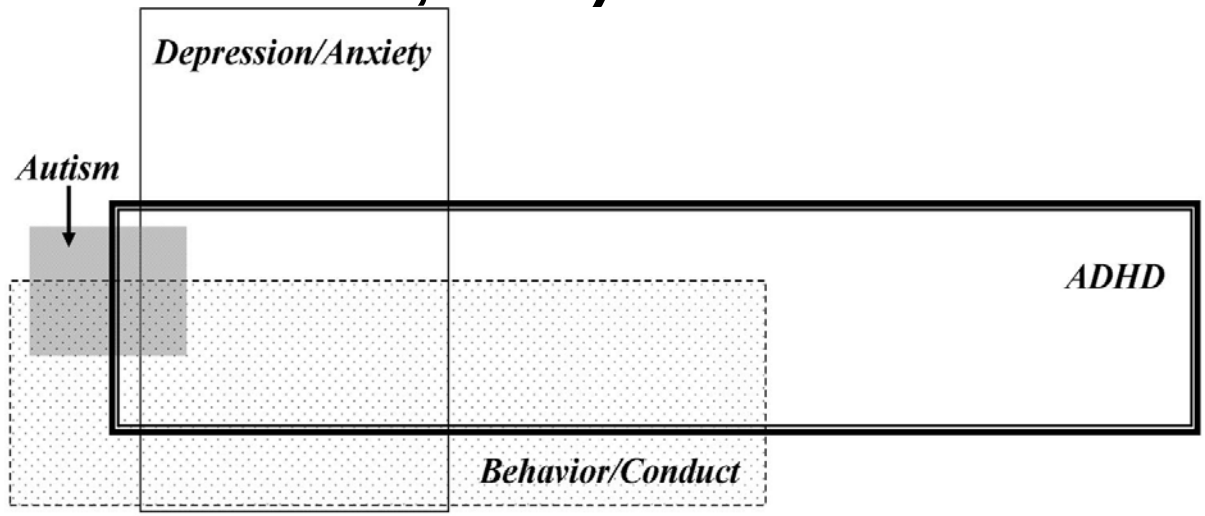
Overlapping Conditions (National Survey of Children's Health, 2007)



	Prevalence	% w/comorbid behavioral condition	% w/comorbid physical health condition
ADHD	6.8%	50.2%	31.3%
Behavior/Conduct Problem	5.3%	67.0%	36.0%
Depression/Anxiety	4.2%	63.1%	38.6%
Autism	0.5%	76.7%	39.0%

From Sheldrick and Perrin (EC), JDBP, 2010

Psychotropic Medication Use (AS-ATN Registry)

Age	Number	Percent using any psychotropic
<6 yo	1514	10
6-11 yo	951	44
12-17 yo	276	66

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Medications Used

- Stimulants 35.6% of total
- SSRI 22.7%
- Atypical antipsychotics 22.5%
- Alpha-agonists 19.3%

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Co-existing Psychiatric Diagnoses

- Depression 2.5%
- Bipolar 1.5%
- ADHD 19%
- OCD 5.4%
- Anxiety 7.5%

- i.e., many children are treated without additional diagnosis

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Quality of Life

	Children with ASD	Normative sample	Children with chronic conditions
Total	65.2	82.3	73.1*
Physical Health	74.6	84.1	77.0
Psychosocial Health	59.9	81.2	71.0*
Emotional ffn	66.4	81.2	71.1*
Social ffn	50.6	83.1	75.1*
School ffn	63.8	78.3	65.6

*Differences between children with ASD and with chronic conditions, $p<0.001$

Kuhlthau et al., JADD, 2010

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QoL Differences by Age

	2-4yo	5-7yo	8-12yo	>12yo
Total	72.1	63.1	61.0	61.6
Physical Health	82.0	69.9	70.7	75.1
Psychosocial Health	66.0	59.4	55.9	54.4
Emotional ffn	71.4	64.9	60.0	72.0
Social ffn	56.2	53.4	50.2	34.9
School ffn	73.7	60.0	57.6	56.6

Kuhlthau et al., JADD, 2010

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AS-ATN and AIRP Activities

- Initial evaluation for all children includes assessment of medical (incl., psychiatric) coexisting conditions
  - Parent report
  - Parent concern
  - Clinician review
  - Screening measures
- Expanding involvement of primary care physicians
- Quality improvement activities addressing constipation, sleep, wait time currently

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Practice Support and Family Toolkits

- Practice guidelines for
  - Constipation
  - Insomnia
  - Medication use for ADHD symptoms
- Toolkits
  - Safe medication use
  - Sleep quick tips for parent
  - Medication decision aid

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Needed Research and Support

- Surveillance and identification of conditions in community and hospital settings
- Expanded involvement of primary care providers in medical conditions
- Recognition that these may reflect major differences in phenotype (and underlying disorder)
- Basic studies of these conditions
- Careful trials of novel treatments

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Thank you!


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Network on Physical Health

Meeting of the IACC

Morning Agenda – Continued

9:45-10:00 Gastrointestinal Disorders in Patients with Autism
Timothy Buie, M.D.
Associate, Department of Pediatrics
Massachusetts General Hospital for Children

10:00-10:15 Catatonia in Autism Spectrum Disorders
Lee Wachtel, M.D.
Medical Director, Neurobehavioral Unit
Kennedy Krieger Institute

10:15-10:30 Immune and Metabolic Conditions in Patients with Autism Population
Richard Frye, M.D., Ph.D.
Director of Autism Research
Arkansas Children's Hospital Research Institute

10:30-11:00 Discussion

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Gastrointestinal Disorders in Patients with Autism

Gastrointestinal Issues in Children with Autism

NIH
July 9. 2013

Timothy Buie MD
Massachusetts General Hospital *for* Children/
Harvard Medical School

MassGeneral Hospital *for* Children

Conflicts

- I have no financial conflicts to disclose

GI/Autism Issues: How prevalent?

- Taylor (2002) reports chronic GI complaints in 17% of autistic children evaluated
- Fombonne 2001 cites GI complaints in an autism cohort at 18.8%
- Malloy (2003) reports 24% have chronic GI issues

GI/Autism Issues: How prevalent?

- Valicenti-McDermott, 2006, evaluated children with ASD and control groups matched for age, sex and ethnicity (50 children/group)
- 70% of children with ASD had GI Issues compared to
- 42% of children with developmental disorder other than ASD
- 28% of children with typical development

GI/Autism Issues: How prevalent?

- Vanderbilt/MGH review of the AGRE database supports high frequency of GI issues. In 460 children, 385 ASD, 75 unaffected siblings the frequency of GI complaints is 43% in ASD vs. 4% in unaffected siblings (2009)
- Schrieber and Minshew report 61% of children with ASD had GI symptoms and this correlated with affective and behavioral symptoms (2012)
- GI Issues are common and parental concerns correlate well with GI assessment. History/screening initially missed children with GI problems (Gorrindo 2012)

Food Allergy/Sensitivity

- Food allergy reported in 36% of children with autism (Lucarelli 1995)
- Up to 50% of surveyed families report their children with autism had a food allergy or sensitivity (Horvath 2002) Over 40% of children will be tried on diets.
- Higher frequency of IgE mediated food allergy to milk proteins in children with ASD compared to unaffected siblings (Trajkovski 2008)
- Sensitivity may = allergy, "drug-like" effect of food, maldigestion.

Gluten-Free Diet trials

- Knivsberg, 1990: Selected patients with high gluten opioid peptides in urine. 8/10 were reported to have behavioral improvements noted. Duplicated study in 2002
- Sponheim 1991: Selected 4 children with autism for gluten-free diet, behavior worsened
- Whiteley, 1999: Observation study of gluten free diet, 2/3 had behavioral improvements noted
- Where else? *Unraveling the Mystery of Autism*, by Karen Seroussi (Simon and Schuster, N.Y.N.Y. 2000)

Diet trials

- Elder et al* 2006 double-blind crossover trial Casein-free, Gluten-free diet in 15 autistic children showed no benefit of diet in a 12-week study
- Blinded parents reported benefits not identified by testing. Perhaps subtle changes/benefits will not be retrieved through standard tests.
- Similar trial from Susan Hyman's group in Rochester reported in abstract form

*J Autism Dev Disord. 2006 Apr;36(3):413-20

Diet trials

- MGH is currently involved in a CF GF diet trial sponsored by Nutricia evaluating the hypothesis that there are likely candidates for success with dietary restiction
- Enrollment is based on gastrointestinal symptoms for inclusion, hopeful that this subset may be more likely responders.
- A remarkable allergy work-up is part of this study to try to identify markers supporting the rationale, although other mechanisms of intolerance or flora modulation may be at play

Autism/GI Issues

- Lactose intolerance and other carbohydrate digestion problems reported by Horvath (1999) and Kushak (2010)
- Our recent data (published in Autism, 2010) suggests high frequency of lactase deficiency in autistic children undergoing endoscopy for GI symptoms, BUT comparison group has a high frequency as well.

Autism/GI Issues
Inflammatory Bowel Issues

- Wakefield (1998) identified a group of autistic children with GI issues.
  - At colonoscopy, *lymphoid nodular hyperplasia* (7 of 12) in the distal ileum and frank colitis in 11 of 12 patients identified. This paper was retracted from Lancet
  - Wakefield 2000 describes "*autistic enterocolitis*" as a unique intestinal lesion with prominent LNH and colitis
- Walker 2013 discusses the findings of gene expression differences in children with ASD and inflammatory bowel diseases compared to non-inflamed individuals. Some distinct difference were seen in children with ASD and IBD although overlap is seen

Thoughts on the GI Literature

- In May 2008, a consensus meeting of experts was brought to Boston in an attempt to review and vet the quality of the literature and research regarding Autism and GI issues Sponsored by Easter Seals of Oregon, The Autism Society (of America), The Autism Research Institute
- The resulting consensus papers have been published in Pediatrics, 23 consensus statements issued by 27 experts
- http://pediatrics.aappublications.org/cgi/content/full/125/Supplement_1/S1
- http://pediatrics.aappublications.org/cgi/content/full/125/Supplement_1/S19

Evaluation, Diagnosis, and Treatment of Gastrointestinal Disorders in Individuals With Autism Spectrum Disorders: A Consensus Report

- **Key Statement (Statement 1)**: Individuals with ASDs who present with GI symptoms warrant a thorough evaluation, as would be undertaken in individuals without ASDs who have the same symptoms or signs. Evidence-based algorithms for the assessment of abdominal pain, constipation, chronic diarrhea, and gastro-esophageal reflux disease (GERD) should be developed.

Evaluation, Diagnosis, and Treatment of Gastrointestinal Disorders in Individuals With ASDs: A Consensus Report
T. Buie et al, Pediatrics 2010; 125: S1-S18

Evaluation, Diagnosis, and Treatment of Gastrointestinal Disorders in Individuals With Autism Spectrum Disorders: A Consensus Report

- **Statement 2:** GI conditions reported to be common in individuals without ASDs are also encountered in individuals with ASDs.
- **Statement 3:** The prevalence of GI abnormalities in ASDs is incompletely understood.
- **Statement 4:** The existence of a GI disturbance specific to persons with ASDs (e.g., "autistic enterocolitis") has not been established.

Evaluation, Diagnosis, and Treatment of Gastrointestinal Disorders in Individuals With ASDs: A Consensus Report
T. Buie et al, Pediatrics 2010; 125: S1-S18

Evaluation, Diagnosis, and Treatment of Gastrointestinal Disorders in Individuals With Autism Spectrum Disorders: A Consensus Report

- **Statement 6:** Individuals with ASDs and GI symptoms are at risk for problem behaviors. When patients with GI disorders present with behavioral manifestations, the diagnostic evaluation can be complex.
- **Statement 8:** Education of caregivers and health care providers is necessary to impart knowledge of how to recognize typical and atypical signs and symptoms of GI disorders in individuals with ASDs.

Evaluation, Diagnosis, and Treatment of Gastrointestinal Disorders in Individuals With ASDs: A Consensus Report
T. Buie et al, Pediatrics 2010; 125: S1-S18

Unsettled Issues

Could GI issues CAUSE autism?

- Environmental/nutritional/microbiome associated factors modulating genetically predisposed individuals

- An inflammation model where some body process (colitis, allergy, infection) releases chemical or immune mediators that affect brain function (Vargas 2005, Welch 2005)

New Thoughts

- Bacterial flora disruptions may alter behavior
- Bacterial flora disruptions exist in the autism population
- There are a number of pathways potentially accounting for altered pain sensitivity, emotional stability etc from this dysbiosis
- Diet changes may alter bacterial flora
- Animal models have been developed to suggest an autism-like change

GI Symptoms in ASD and MET Gene Is MET polymorphism a biomarker?

- A genetic variant that disrupts MET transcription is associated with autism (Chromosome 7q31 polymorphism G>C) Proc Natl Acad Sci U S A. 2006 Nov 7;103(45):16621-2. Campbell et al;
- Distinct Genetic Risk Based on Association of MET in Families with Co-Occurring Autism and Gastrointestinal Conditions (Pediatrics 2009;123;1018-1024; Campbell et al)
- A known affect of this gene abnormality is poor intestinal healing, newer studies suggest autoimmune relationship in mothers with abnormality (Heuer 2011)

Impaired CHO Digestion and Transport and Dysbiosis

- In AUT-GI subjects, ileal transcripts for the disaccharidases sucrase isomaltase, maltase glucoamylase, and lactase, and the monosaccharide transporters, sodium-dependent glucose co-transporter, and glucose transporter 2 were significantly decreased. (Williams et al, PLOS One Sept 2010)

Impaired CHO Digestion and Transport and Dysbiosis

- This study supports our previous enzymatic findings of disaccharide deficiency and goes further to show associated flora alteration is present (cause/effect?)
- This supports rational for overgrowth syndrome (so called dysbiosis)

Abnormal Microbiome Assessments

- Feingold: Desulfovibrio species identified in ASD sources, not in control comparisons (Anaerobe 2010)
- Williams: Sutterella species identified in children with ASD but not controls (PLOS 2012)

Conclusions

- GI issues are common in children with autism and some may be more common than in the general pediatric population
- GI conditions in autism may promote worsening of autistic behaviors, more work is needed to determine if any impact on causation of autism
- The GI tract is accessible for study and may be a valuable (if messy) window to the body for genetic, microbiota and inflammatory mediator data

Conclusions

- The pediatrician needs to consider the child with autism in a medical light
- Until proven otherwise, behaviors should be considered medically-based. Testing and treatment algorithms are crucial so as not to put this vulnerable population at risk for excessive testing or unnecessary treatment
- Profound aggression or self injurious behaviors may require psycho-pharmacological or behavioral management to stabilize the patient. Attention to the possible medical etiology should be pursued as well

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Catatonia in Autism Spectrum Disorders

Catatonia in Autism

July 9, 2013
Interagency Autism Coordinating Committee Meeting

Lee Elizabeth Wachtel, MD
Kennedy Krieger Institute
Associate Professor of Psychiatry
Johns Hopkins School of Medicine
Baltimore, Maryland, USA

Disclosures

- The author does not have any conflicts of interest or financial disclosures.

Objectives

- Discuss the concomitance of catatonia in autism
- Explain catatonia
- Present the range of symptoms and “faces” of catatonia, including repetitive self-injurious behavior
- Gather support for future research

Catatonia and Autism

- 3 population-based studies report catatonia in 12-18% of autistic patients

- **Wing & Shah, 2000, UK.**
  - 506 children and adults with autism evaluated
  - 17% met criteria for catatonia
  - Led to WS Autistic Catatonia Criteria
- **Billstedt, Gillberg & Gillberg, 2005, Sweden**.
  - 120 patients dx'ed autism in childhood and followed for 13-22 years
  - 12% dx'ed with catatonia (50% SIB – 19% extreme violence – 23% tics)
- **Ghaziuddin, Dhossche & Marcotte, 2012, US**.
  - 101 patients <18 yo
  - Dxs: PDD, Psychosis NOS, IED, MR, Catatonia, NMS
  - 17.8% met criteria for catatonia - only 2 previously diagnosed

Early recognition in autism

"[Around the onset of puberty] the children changed: they became immobile, more shy, taciturn, went off by themselves, avoided their playmates, became 'couch potatoes,' hated to leave the house."

"Gradually catatonic-hebephrenic symptoms began to predominate. . . The patients assumed eccentric postures, froze for brief periods in one position, refused food. They became ever more inaccessible and negativistic. In this particular phase of the illness the diurnal variation was striking: during the day they were lazy and inactive, lay mostly in bed, and had contact with no one. In the evenings they became loud . . . and agitated. Typical for many of them was their tendency to self-injury: they beat their heads against the wall or the bedstead, placed themselves in bed so, that their necks rested on the bedframe, pressed on their eyeballs, throttled themselves with their hands. . .

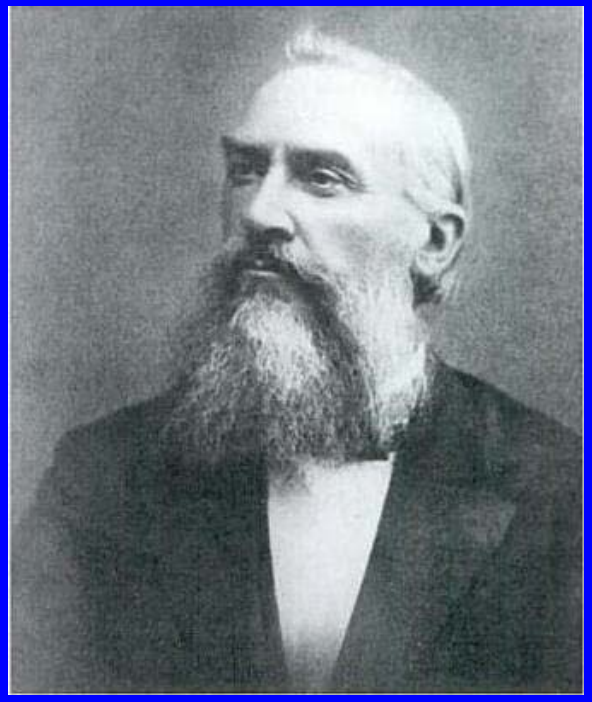
GN Pivovarova, "Die Besonderheiten des Verlaufs der Hebephrenie im Jugendalter," Psychiatrie, Neurologie und Medizinische Psychologie, 17 (1965), 185-191.

Cata-what?

- Coined in 1874 by Karl Kahlbaum
- Clustered distinct:

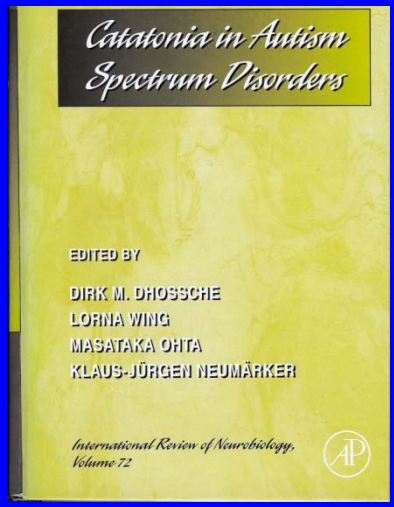
Motor,
Vocal and
Affective symptoms

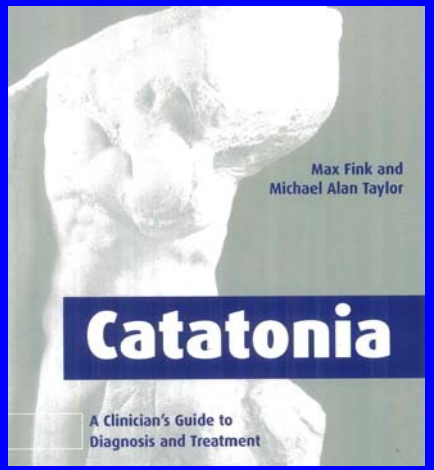
into *one disease entity*.



Common Catatonic Symptoms

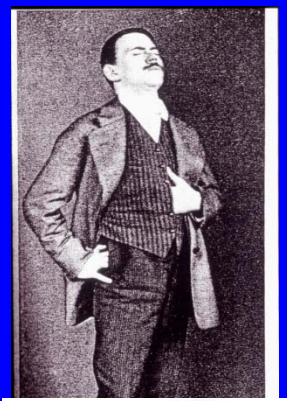
- Immobility/rigidity
- Stupor
- Mutism
- Posturing
- Echophenomena
- Grimacing
- Physical excitement
- Combativeness
- Stereotypy
- Negativism
- Autonomic instability

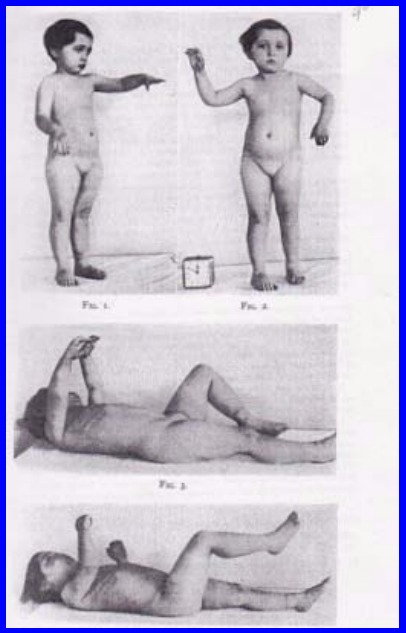




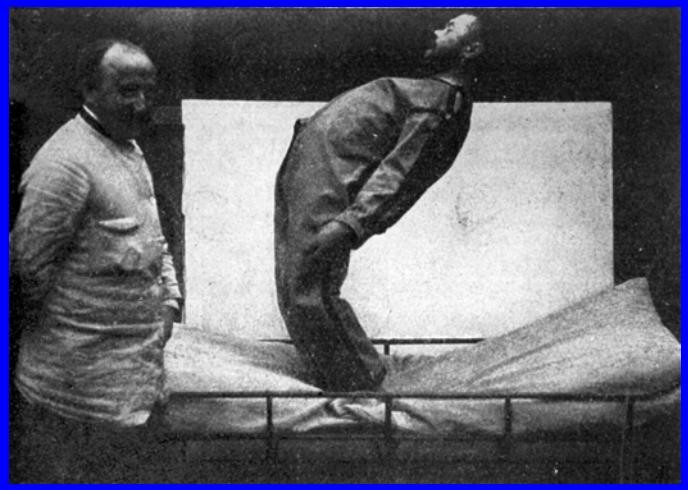
Challenging History

- Erroneously purloined by schizophrenia diagnosis
- Extensively documented
  - Including lethal malignant forms
- Receives separate classification only in DSM-V





History returns in today's autism



DIRECT IMPACT

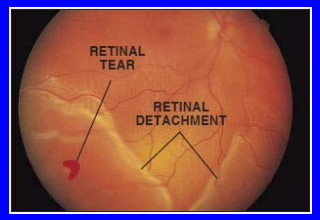
- Inability to move
- Dehydration/malnutrition
- Inability to void
- Autonomic and thermoregulatory instability
- Severe tissue damage from repetitive SIB





Additional Vexing Symptoms

- Wing-Shah Autistic Catatonia Criteria:
  - Increased slowness in movement and vocalization
  - Difficulty initiating and completing tasks
  - Increased prompt dependence
  - Passivity/amotivation
- ➡ Prominent functional deterioration



FUNCTIONAL REGRESSION IN AUTISTIC CATATONIA

[redacted]s painting - **JULY 2009**

[redacted]s painting - **MAY 2011**

Concomitant Posturing and immobility

talk about REGRESSION

On April 27, 2011 [redacted] orally read the following snip-it. It took him 23 seconds to read it outloud. He read it fluently, with inflection, and without hesitation:

"A post office is a place that takes care of mail. People go to a post office to mail letters and packages. You can buy stamps there, too. Every letter and package is sorted at the post office. A postal carrier takes your mail to your mailbox. Some mail is sent to far away places by plane, train or truck."

On July 12, 2011 it took [redacted] 15 minutes to orally read the following word:

"butter"

He looked at the word and pointed to it repeatedly, then looking at me. It appeared that his mouth was attempting to form the beginning of the word, but he could not say it. He finally uttered the word in response to extensive cues.

●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●

On April 27, 2011 it took [redacted] 26 seconds to independently generate and write the following answer to a comprehension question:

"People can mail letters and packages at a post office."

On April 27, 2011 it took [redacted] 23 seconds to independently write the following entry into his journal:

"I saw Judy. I read a paragraph and answered comprehension questions."

On July 12, 2011, it took [redacted] 17 minutes to write following word:

"train"

It required over 50 cues plus hand-over-hand assistance and redirection.

●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●

SIB* as a symptom of catatonia

- Concept dating back to 1849
- Largely ignored due to “Kraepelin’s error” and later absorption of SIB into ABA theory
- Hypothesized in 2010 by Wachtel & Dhossche
- Expanding international literature
- Incorporated in 2013 by Fink in “*Rediscovering Catatonia: Biography of Treatable Syndrome*”

*SIB determined to be of no operant function

Treatment of Catatonia

- Incredibly simple ☺
- Catatonia Treatment Paradigms:
  - Benzodiazepines in increasing dosages
    - Lorazepam challenge test of 1mg PO/IM/IV
    - Dosages ranging from 12-18mg/day common
  - Avoidance of offending agents, namely antipsychotics
  - Electroconvulsive therapy (ECT)

Demonstrative Video

Parental perspective

- We lost our son twice, once to Autism at 2 years old and then to Catatonia at 19 years old. We finally found an answer and help for our son. I nicknamed catatonia “the beast” because of the way it takes over my son completely. He had trouble doing mostly everything including eating. This is real and very ugly. It took over his life and basically our lives also. We finally have our son back.

- He is having periods of calm like we have never seen before. One staff person said it best “I got to see the real P. for the first time.” His cognitive skills have definitely improved. He is much more capable of having an intention and being able to act on it from start to finish. Most nights he is sleeping well some nights with restraints off having no SIB in his sleep.. he seems to have periods of real joy and happiness where he can be very playful and engaging - it's beautiful to see, really remarkable. I have to say that seeing how good he can be is a gift we were never sure we would see (I can't imagine how he must feel inside).

Take-home message

- Catatonia afflicts many people with autism
- Catatonic symptoms wreak havoc
- Catatonia is readily diagnosed
- Catatonia is readily treated
- Ongoing research is imperative

“There is no use trying,” said Alice; “one can’t believe impossible things.”

“I dare say you haven’t had much practice,” said the Queen. “When I was your age, I always did it for half an hour a day. Why, sometimes I’ve believed as many as six impossible things before breakfast.”

Lewis Carroll
Through the Looking Glass

"Nous ferions davantage de choses si nous en savions moins d'impossible."

Le Marquis de Condorcet

IACC
INTERAGENCY AUTISM
COORDINATING COMMITTEE

Meeting of the IACC

Immune and Metabolic Conditions in Patients with Autism Population

Immune and Metabolic Conditions in Patients with Autism Spectrum Disorder

Richard E. Frye, M.D., Ph.D.

Director of Autism Research

Director of Autism Multispecialty Clinic

Associate Professor of Pediatrics

Arkansas Children's Hospital

University of Arkansas for Medical Sciences

Immune and Metabolic Conditions in Patients with Autism Spectrum Disorder

Estimated Prevalence of Genetic Abnormalities

(Schaefer and Mendelson, Genetics in Medicine, 2013: 15-399-407)

Cytogenetic Abnormalities	3%
Fragile X	1-5%
Rett Syndrome (Females only)	4% (~1% overall)
Chromosomal Microarray	10%
PTEN Mutation	<1%
Other	?? Estimated @ ~10%
Total	21-29%

This leaves 71%+ without an identified genetic diagnosis.

Inherited Metabolic Disorders – Mostly Case Reports

Mitochondrial Disease Cases (~25%)
6-*N*-trimethyllysine dioxygenase deficiency
Dihydropyrimidinase deficiency
Disorders of γ-aminobutyric acid metabolism
Carnitine Biosynthesis
Smith–Lemli–Opitz Syndrome
Adenylosuccinate lyase deficiency
Disorders of creatine metabolism
Sulfation defects
Branched Chain Ketoacid Dehydrogenase Kinase Deficiency
Phosphoribosylpyrophosphate synthetase superactivity
Succinic semialdehyde dehydrogenase deficiency

Immune and Metabolic Conditions in Patients with Autism Spectrum Disorder

Non-inherited Immune & Metabolic Conditions Associated with Autism

Mitochondrial Disorders	Redox -Folate Abnormalities	Immune Dysfunction
Mitochondrial Disease 75% no genetic abnormalities Electron Transport Chain Deficiencies in Immune Cells and Brain Tissue Electron Transport Chain Complex I and IV overactivity Acyl-carnitine Elevations	Decreased Glutathione, Methionine & Cysteine Reduced enzyme function Glutathione Peroxidase Increased oxidized Glutathione DNA, Proteins and Lipids MTHFR/DHFR Polymorphisms Cerebral Folate Abnormalities	Microglial Activation Elevated proinflammatory cytokines Autoantibodies Folate Receptor Alpha Basal Ganglia Endothelial Maternal fetal brain Ab

Genetics Disorders Associated with Autism & Metabolic Abnormalities

Mitochondrial Disorders	Redox -Folate Metabolism
Rett syndrome Down syndrome PTEN mutations 15q11-q13 duplication Angelman syndrome Septo-optic dysplasia	Rett syndrome Down syndrome Phenylketonuria

Mitochondrial dysfunction in autism spectrum disorders: a systematic review and meta-analysis

DA Rossignol[1] and RE Frye[2] Mol Psych 2012, 17:290-314

	Studies	*Total N*	*Overall prevalence*
General ASD population			
Mitochondrial disease in ASD	3	536	5.0% (3.2%, 6.9%)
Elevated lactate	6	479	31.1% (27.0%, 35.3%)
Elevated pyruvate	2	110	13.6% (7.2%, 20.1%)
Elevated lactate/pyruvate ratio	1	192	27.6% (21.2%, 33.9%)
Elevated alanine	1	36	8.3% (0.0%, 20.1%)
Low total carnitine	1	30	90.0% (81.0%, 99.0%)
Elevated creatine kinase	1	47	46.8% (32.4%, 61.2%)
Elevated ammonia	1	80	35.0% (24.5%, 45.5%)
Elevated AST	1	147	45.6% (37.5%, 53.7%)[a]
Elevated ALT	1	87	7.0% (0.5%, 13.5%)

Discrepancy between prevalence of diagnosed mitochondrial disease and prevalence of biomarkers of mitochondrial disease likely be due to criteria used to define mitochondrial disease

Biomarker	*Number of studies*	*ASD*		*Control*		*F-value*	*Hedge's g (CI)*
		Total N	*Mean (95% CI)*	*Total N*	*Mean (95% CI)*		
Lactate (mM l^{-1})	5	114	1.73 (1.61, 1.88)	114	0.91 (0.87, 0.96)	8.72†	1.42 (0.92, 1.92)†
Pyruvate (nM l^{-1})	1	24	0.12 (0.11, 0.14)	24	0.06 (0.06, 0.06)	20.25†	1.96 (0.85, 3.08)†
Carnitine (mg ml^{-1})	1	30	3.83 (3.44, 4.31)	30	6.40 (6.22, 6.62)	4.61†	2.51 (1.61, 3.42)†
Ubiquinone	1	15	91.4 (81.9, 103.0)	15	144.2 (130.4,161.1)	2.13	1.90 (0.79, 3.01)†

A review of 133 ASD patients evaluated for a mitochondrial disorder revealed a high prevalence of three biomarkers for mitochondrial disease after confirmation

Biomarker	Total Tested	Abnormal at Least Once	Patients with Abnormalities Tested Twice	Abnormal Twice	Prevalence
Lactate	96	34 (35%)	20 (59%)	9 (45%)	15.9%
Alanine	94	8 (9%)	5 (63%)	1 (20%)	1.7%
AST	113	20 (18%)	14 (70%)	8 (57%)	10.1%
CK	81	11 (14%)	4 (36%)	2 (50%)	6.8%
Alanine-to-Lysine Ratio	98	39 (40%)	20 (51%)	8 (40%)	15.9%
Acyl-carnitine	58	23 (40%)	10 (44%)	6 (60%)	23.8%

Frye. NAJMS 2012, 5:141-147

Mitochondrial Dysfunction in Autism.

Giulivi et al. JAMA 304:2389-2396

- Lymphocytes from 10 children with autism and 10 age and gender matched controls
- 80% demonstrated abnormal function in at least one electron transport chain complex
  - 60% complex I abnormality
  - 40% complex V abnormality
  - 50% multiple complexes
- 20% demonstrated abnormalities in cytB, a mitochondrial DNA gene

Immune and Metabolic Conditions in Patients with Autism Spectrum Disorder

Mitochondrial dysfunction in autism spectrum disorders: a systematic review and meta-analysis

DA Rossignol[1] and RE Frye[2] Mol Psych 2012, 17:290-314

ASD children with mitochondrial disease have more medical abnormalities than idiopathic ASD children

Only 23% of ASD children with mitochondrial disease have mitochondrial DNA abnormalities

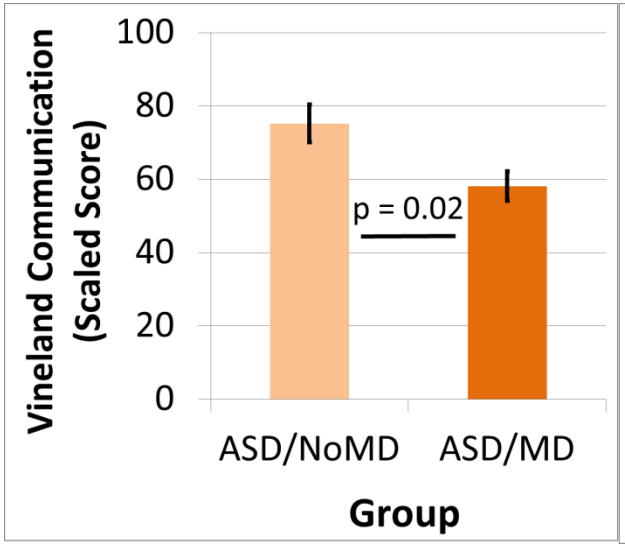
	ASD/MD		*General ASD*			*General MD*		
	%	N	%	χ^2	P	%	χ^2	P
Male	61	72	81	18.7	<0.0001	58	0.26	0.61
Developmental regression	52	83	25	32.3	<0.0001	60	2.2	0.14
Seizures	41	86	11	79.1	<0.0001	33	2.48	0.11
Hypotonia	62	55	51	2.6	0.10	67	0.62	0.43
Fatigue/lethargy	54	61				19	48.6	<0.0001
Ataxia	58	19				13	34.0	<0.0001
Growth delay	21	73						
Motor delay	51	79	9	170.1	<0.0001			
GI abnormalities	74	35	20	63.8	<0.0001	39	18.0	<0.0001
Cardiomyopathy	24	38				26	0.1	0.79
Myopathy	0	12				11	1.5	0.22
Elevated lactate	78	50	31	51.6	<0.0001	54	12.4	<0.001
Elevated pyruvate	45	22	14	17.6	<0.0001			
Elevated lactate/pyruvate ratio	43	23	28	2.6	0.11			
Abnormal organic acids	36	36						
Elevated creatine kinase	34	29	47	1.96	0.16			
Elevated alanine	32	28						
Abnormal brain imaging	23	69				70	72.6	<0.0001
Normal ETC activity	16	69				3	40.1	<0.0001
Abnormal complex I	53	96				45	2.48	0.12
Abnormal complex II	9	65				8	0.09	0.76
Abnormal complex III	30	96				31	0.04	0.83
Abnormal complex IV	20	97				34	8.47	0.004
Abnormal complex V	23	44				12	5.0	0.03
Multiple complex deficiency	36	59				27	2.43	0.12
Elevated citrate synthase	24	17				44	2.76	0.10
Abnormal light microscopy	18	49				81	126.4	<0.0001
mtDNA abnormality	23	87				16	3.17	0.08

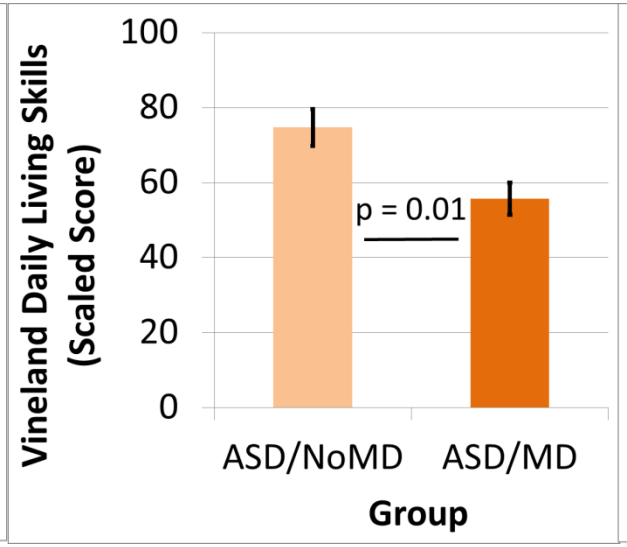
Redox metabolism abnormalities in autistic children associated with mitochondrial disease

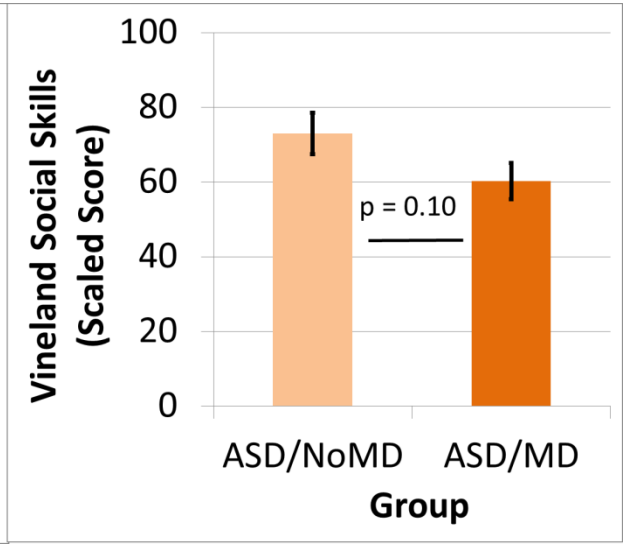
RE Frye[1,2], R DeLaTorre[3], H Taylor[4], J Slattery[1,2], S Melnyk[1,2], N Chowdhury[1] and SJ James[1,2]

Transl Psychiatry (2013) 3, e273; doi:10.1038/tp.2013.51

18 children with ASD and mitochondrial disease (ASD/MD) were compared to 18 children with ASD in which mitochondrial disease had been ruled out (ASD/NoMD). Development, as evaluated by the Vineland Adaptive Behavior Scale (2nd Edition), demonstrated significantly lower development in communication and daily living skills in children with ASD and mitochondrial disease.

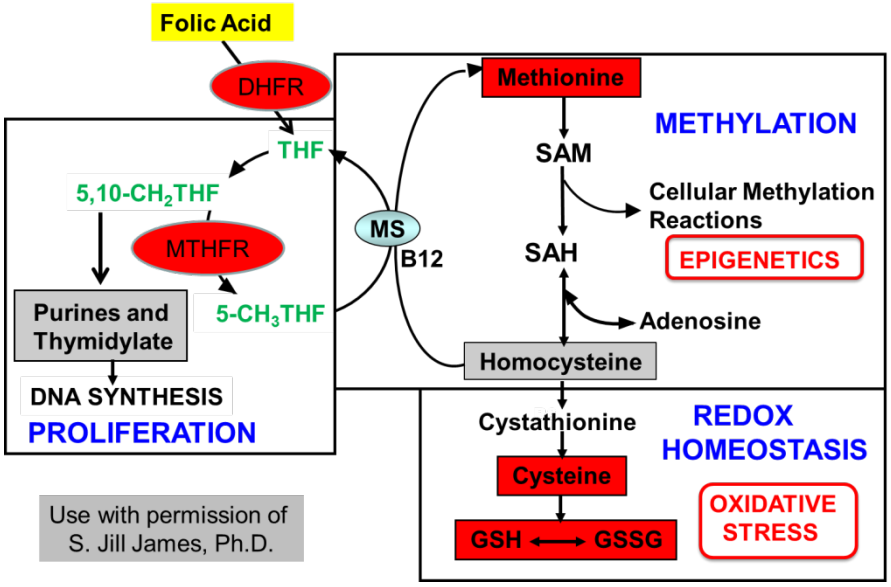






Immune and Metabolic Conditions in Patients with Autism Spectrum Disorder

Redox metabolism is linked with methylation and antioxidant capacity (James et al., 2009)



Metabolites

THF	TetraHydroFolate
SAM	*S*-Adenosyl methionine
SAH	*S*-Adenosyl homocysteine
GSH	Reduced Glutathione
GSSG	Oxidized Glutathione

Enzymes

DHFR	Dihydrofolate Reductase
MS	Methionine Synthase
MTHFR	Methylenetetrahydrofolate Reductase

Oxidative stress-related biomarkers in autism: Systematic review and meta-analyses
Frustaci et al. Free Radical Biology and Medicine 2012; 52:2128-41.

- Significant reduction in blood GSH, Methionine and Cysteine
- Significant elevation in blood GSSG
- Significant reduction in blood glutathione peroxidase
- Significant association of MTHFR homozygous C677T polymorphism with ASD

Preliminary evidence for involvement of the folate gene polymorphism 19 bp deletion-DHFR in occurrence of autism. Adams et al. Neuro Letters. 2007, 422:24.
Implicates DHFR association with ASD, particular if MTHFR C677T is also present

Immune and Metabolic Conditions in Patients with Autism Spectrum Disorder

Glutathione Abnormalities are found in several tissues in children with ASD

Dr Jill James, Ph.D. and her group has demonstrated in case-control studies that glutathione antioxidant/detoxification capacity is decreased in lymphoblastoid cell lines, peripheral blood mononuclear cells and post-mortem brain from children with ASD (Rose et al. Autism Res Treat. 2012, 2012: 986519; Rose et al. Transl Psychiatry. 2012, 2:e134; James et al. FASEB J. 2009, 23:2374-83; James et al. Am J Med Genet. 2006, 141B:947)

Redox Abnormalities can lead to DNA, protein and lipid oxidative damage in ASD

Studies have demonstrated oxidative damage in children with ASD (Melnyk et al., JADD 2012, 42:367; Rose et al. Transl Psychiatry. 2012, 2:e134; Napoli et al. Mol Autism. 2013, 4:2; Meguid et al. Biol Trace Elem Res 2011, 143:58; Damodaran et al. Redox Rep 2011 16:216)

Redox Abnormalities may result in Epigenetic Changes in children with ASD

SAM, methionine and SAM/SAH ratio was decreased and DNA was hypomethylated in ASD children compared to unaffected sibling controls suggesting a reduced DNA methylation capacity which is essential for epigenetic regulation (Melnyk et al., JADD 2012, 42:367-77)

Redox abnormalities may be amendable to treatment

Efficacy of methylcobalamin and folinic acid treatment on glutathione redox status in children with autism. James et al. Am J Clin Nutr 2009; 89:425–30.

- Simple treatment of 75 µg/kg methylcobalamin every 3 days and 400mcg folinic acid every day significantly improved GSH, GSSG and GSH/GSSG ratio in ASD children

Immune and Metabolic Conditions in Patients with Autism Spectrum Disorder

Inherited Immune Abnormalities in Autism

- Studies find an increased incidence of autoimmune disease in families of ASD children
- Studies implicating Human Leukocyte Antigen Haplotypes with ASD are inconsistent (Careaga et al, Neurotheraputics 2010, 7:283)

Humoral Immune Abnormalities in Autism (and treatment)

- Studies have associated a variety of autoantibodies with ASD
  - Brain directed: Myelin basic protein, Endothelial cells, Serotonin receptor, caudate nucleus, cerebral cortex, cerebellum (Careaga et al, Neurotheraputics 2010, 7:283)
  - Folate Receptor Alpha (Frye et al., Mol Psych. 2013, 18:369)
  - Maternal Fetal Brain Antibodies (Fox et al. Dev Neurobiol. 2012, 72:1327)
- ASD is associated with reduced IgG and IgM levels and lower IgG levels correlate with higher aberrant behavior checklist scores (Heuer et al. Autism Res. 2008, 1:275-283)
- Small open-label studies have treated ASD patients with IVIG
  - Monthly treatment of 10 autism patients with underlying antibody deficiencies for 6 months resulted in improvements in behavior and autistic symptoms by subjective measures (Gupta et al. JADD. 1996, 26:439)
  - Monthly treatment of 10 autism patient with normal immune system with IVIG at 6 week intervals at a lower than standard dose resulted in symptom improvement in only one child (Plioplys. JCN. 1998, 13:79)

Immune and Metabolic Conditions in Patients with Autism Spectrum Disorder

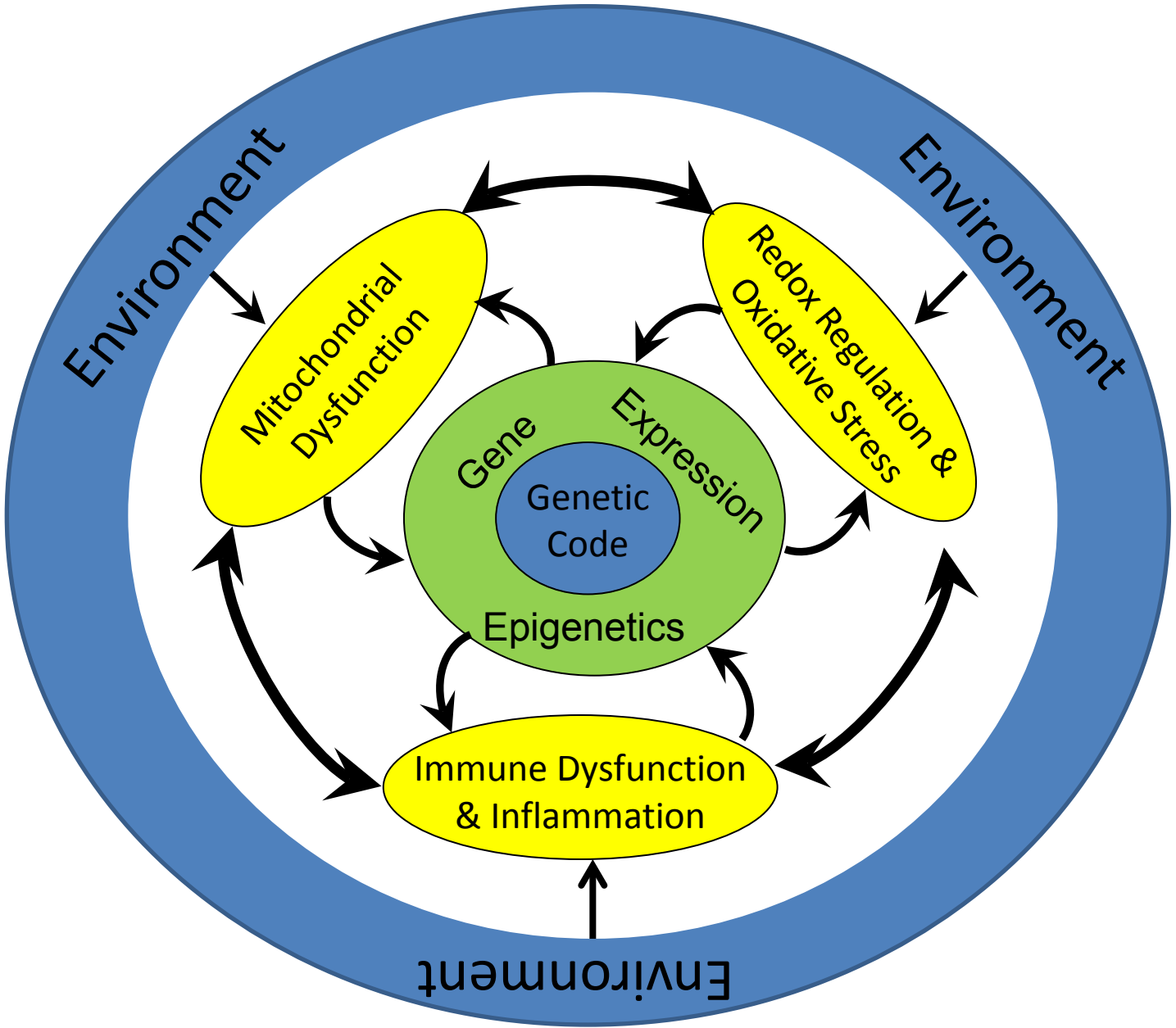
Proinflammatory cytokines are increased in the blood, brain tissue and cerebrospinal fluid

- Post-mortem brain tissue of ASD individuals demonstrated increases in TGF-β1, MCP-1, IGFBP-1 with production from reactive astrocytes (Vargus et al., Ann Neuro. 2005, 57:67)
- CSF from individuals with ASD demonstrates a wide variety of proinflammatory cytokines: IFN-γ, TGF-β2, MCP-1, IL-8, IP-10, VEGF, IGFBP-1, IGFBP-3, IGFBP-4. LIF, FGF-4, FGF-9, PARC, HGF (Vargus et al., Ann Neuro. 2005, 57:67) and TNF-α (Chez et al. Pediatr Neurol 2007, 36:361)

Microglial activation may play a role in autism

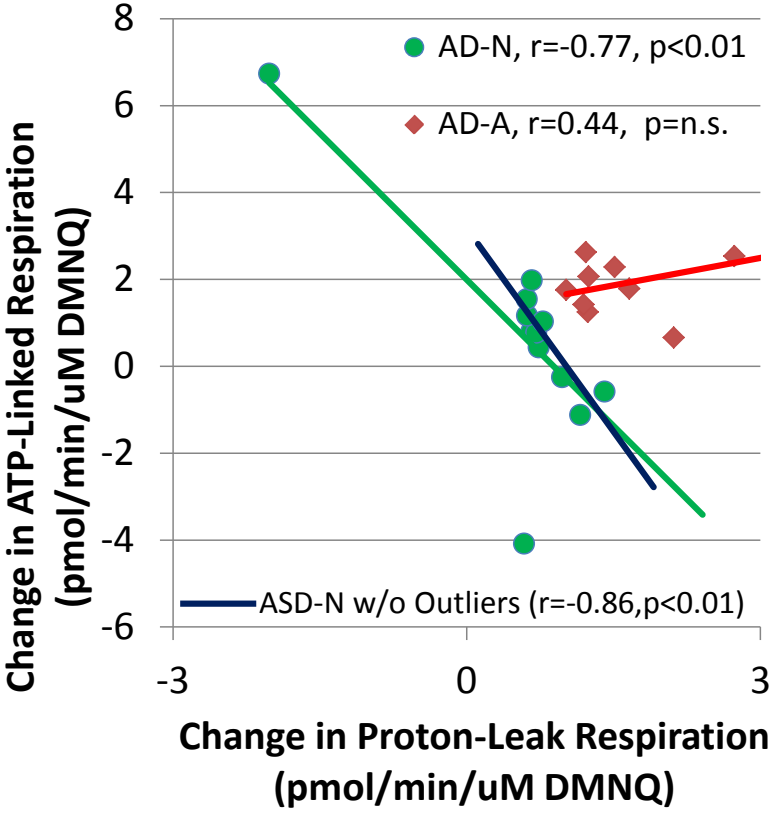
- Post-mortem histology of ASD brains showed microglial activation associated with neuron cell loss particularly in the cerebellum (Vargus et al., Ann Neuro. 2005, 57:67)
- Wild-type bone marrow transplant and targeted expression of MECP2 in myeloid cells resulted in normalization or marked attenuation of most symptoms in the Rett mouse model. Microglial phagocytic activity was key (Derecki et al., Nature 2012. 484:105)
- Other studies have supported activation of microglial in ASD using post-mortem (Morgan et al, Bio Psychiatry. 2010, 68:368; Tetreault et al, JADD 2012. 42:2569) and PET imaging (Suzuki et al, JAMA Psychiatry 2013, 70:49) techniques.
- Ten children with ASD were treated with minocycline, a drug believed to reduce neuroinflammation and microglial activation, in an open-label study for 6 months. No clinical improvement was found despite changes in BDNF, HGF and IL-8 (Pardo et al. J Neurodev Disord. 2013, 5:9).

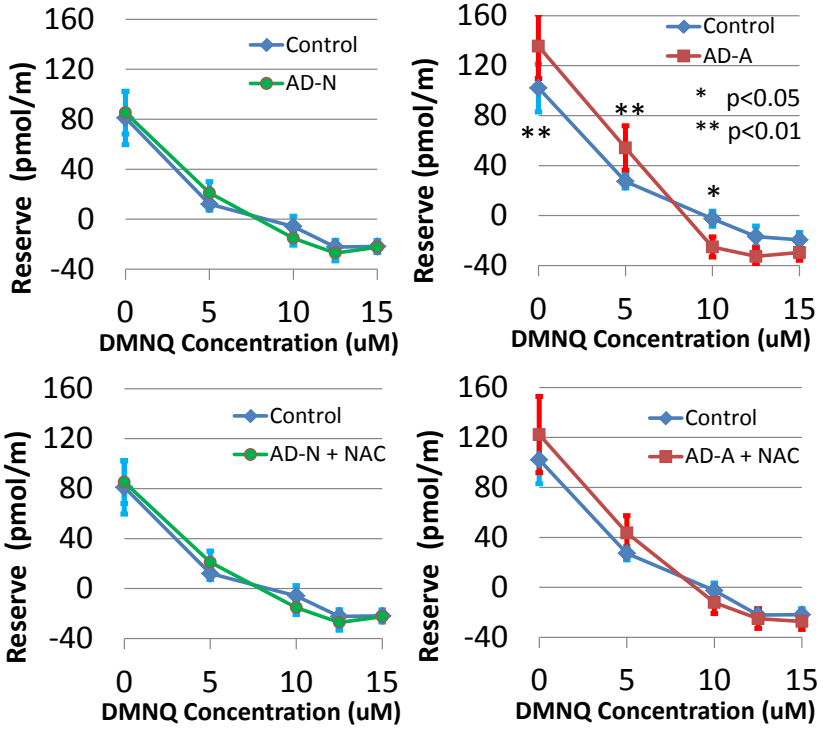
Immune and Metabolic Conditions in Patients with Autism Spectrum Disorder



Immune and Metabolic Conditions in Patients with Autism Spectrum Disorder

Lymphoblastic cell lines (LCLs) were challenged with DMNQ (known to increase intracellular superoxide). Change in mitochondrial function in 22 LCLs derived from children with autistic disorder (AD) was compared to paired control LCLs. Two different patterns of change in mitochondrial function were found in the AD LCLs, but not in the control LCLs. **45%** of the AD LCLs demonstrated a unique change in mitochondrial function that was associated with a sharp reduction in reserve capacity suggesting vulnerability to oxidative stress. Incubating AD LCLs in N-acetyl-cysteine prior to the challenge normalized the reserve capacity in the abnormal group.

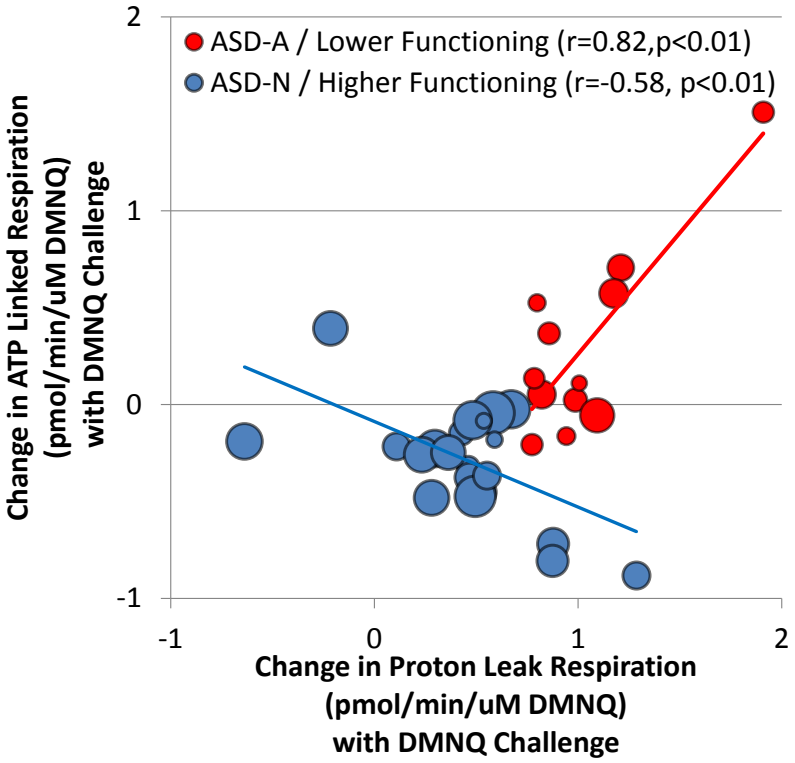


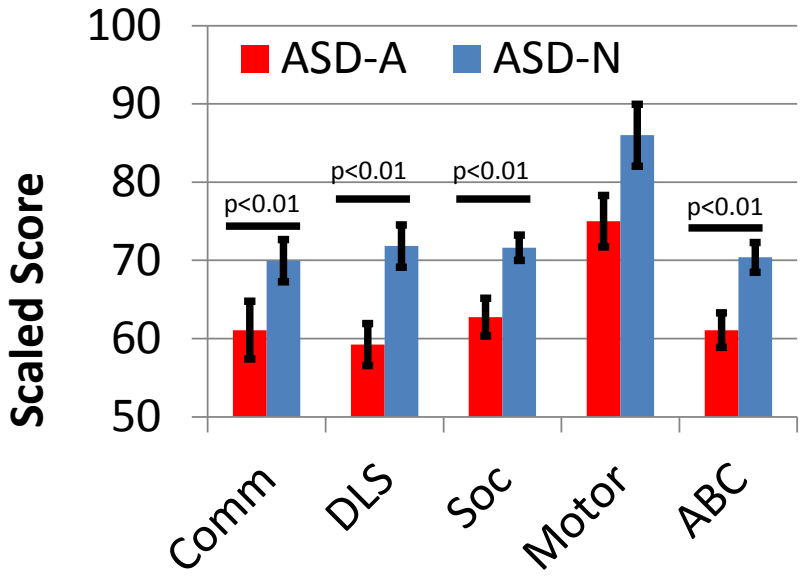


(Rose et al, Frye et al, IMFAR, 2013, Frye et al, UMDF 2013)

Immune and Metabolic Conditions in Patients with Autism Spectrum Disorder

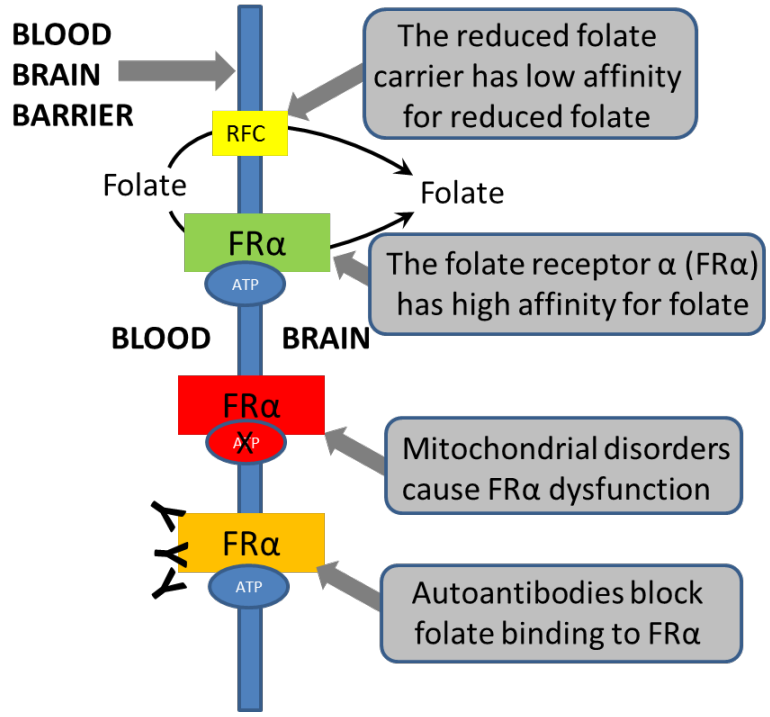
The lymphoblastic cell line data was verified in children with autism spectrum disorder (ASD). We measured mitochondrial function in peripheral blood mononuclear cells (PBMCs) derived from 35 ASD children using the same DMNQ challenge. Again, two different patterns of change in mitochondrial function were found in ASD PBMCs (graph left). **34%** of the ASD PBMCs demonstrated the unique change in mitochondrial function associated with a reduction in reserve capacity. The Vineland Adaptive Behavior Scale demonstrated that these ASD children with atypical mitochondrial function had significantly poorer development (graph right).





(Frye et al, IMFAR, 2013, Frye et al, UMDF 2013)

Immune and Metabolic Conditions in Patients with Autism Spectrum Disorder



Autoantibodies have been linked to cerebral folate abnormalities in children with autism spectrum disorder in case studies and case series. (Moretti et al., Neurology 2005, 64:1088; JADD 2008, 38:1170; Ramaekers et al. NEJM 2005, 352:1985; Neuropediatrics 2007, 38:276; Dev Med Child Neurol 2008, 50:346)

Cerebral folate receptor autoantibodies in autism spectrum disorder. Frye et al. Mol Psych 2013, 18:369. Studied 93 Patients

- 75% had at least one FRα autoantibody
- **60%** had blocking FRα autoantibody
- 44% had binding FRα autoantibody

Mitochondrial disorders have been linked to cerebral folate deficiency. (Allen et al. Ann Neurol 1983, 13:679; Pineda et al. Ann Neurol 2006, 59:394; Ramaekers et al Neuroped 2007, 38:184; Garcia-Cazorla et al Neurol 2008; 70:1360; Frye, Naviaux JPN 2011. 9:427)

Role of folate receptor autoantibodies in infantile autism. Ramaekers et al. Mol Psych 2013, 18:270 Blocking autoantibody was found in **47%** of ASD children as compared to 3% of developmentally delayed non-autistic controls.

Immune and Metabolic Conditions in Patients with Autism Spectrum Disorder

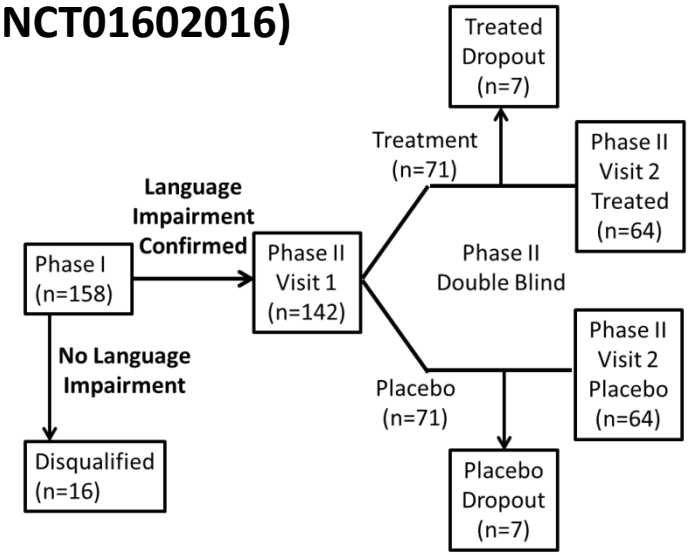
High-dose folinic acid (leucovorin calcium) treatment in ASD children with the folate receptor alpha autoantibody or cerebral folate deficiency have good outcomes in preliminary studies

Five Children with low-functioning ASD with neurological deficits. Ramaekers et al. NEJM 2005, 352:1985
20% complete recovery
40% marked improvement in communication

18 low-functioning regressive ASD children treated. Ramaekers et al. Neuropediatrics 2007, 38:276
11% amelioration of all ASD and neurologic symptoms
17% amelioration of all neurological symptoms
Others (72%) partial improvement
31% amelioration of social symptoms
69% amelioration of communication symptoms
46% amelioration of repetitive behavior and restricted interest

Cerebral folate receptor autoantibodies in autism spectrum disorder. Frye et al. Mol Psych 2013, 18:369. 44 patients with FRα autoantibody treated and compared to controls. Significant improvement in expressive and receptive language, stereotyped behavior and attention.

A DBPC study on folinic acid for ASD (NCT01602016)



Immune and Metabolic Conditions in Patients with Autism Spectrum Disorder

Major Importance of studying metabolic and immune disorders in ASD

Understanding these disorders provides a pathway for treatment with existing medications and protocols and the potential for prevention

Key Research Issues for Metabolic and Immune Disorders in Autism

- How are they defined and what is the diagnostic criteria ?
- What biomarkers can accurately reflect underlying abnormalities ?
- How can we screening children with ASD for these disorders ?
- What is the prevalence of each disorder in autism ?
- What is the significance of each disorder for autism ?
- What treatments are effective to both correct physiological abnormalities and substantially improve development ?

Keys Questions for Each Major Metabolic Disorder

Mitochondrial Disorders	Disease vs Dysfunction
Oxidative Stress	Acute vs Chronic
Immune Dysfunction	Inflammation vs Dysregulation
	Role of Antibodies, Microglial and Cytokines

Immune and Metabolic Conditions in Patients with Autism Spectrum Disorder

Open

Molecular Psychiatry (2011), 1–13

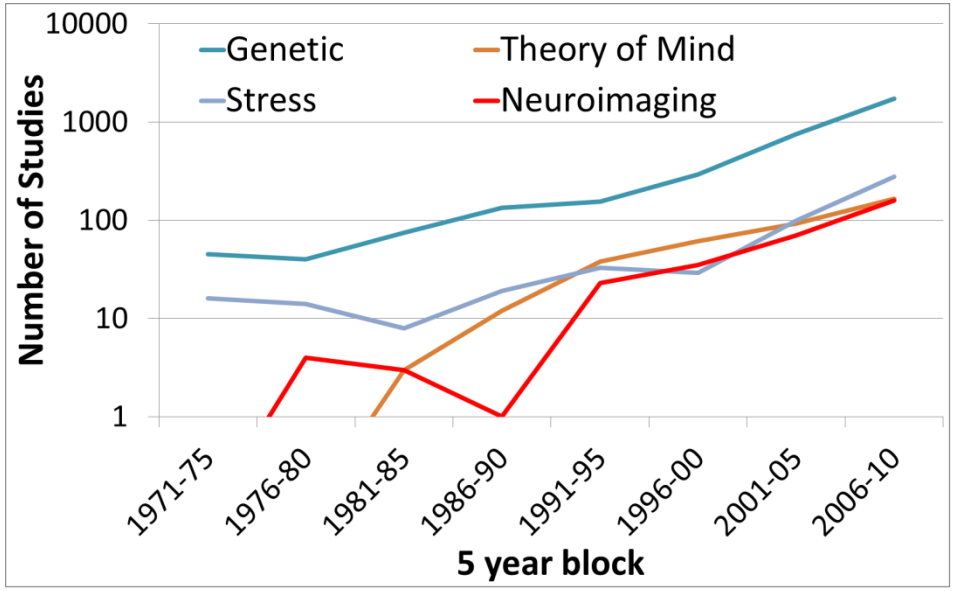
www.nature.com/mp

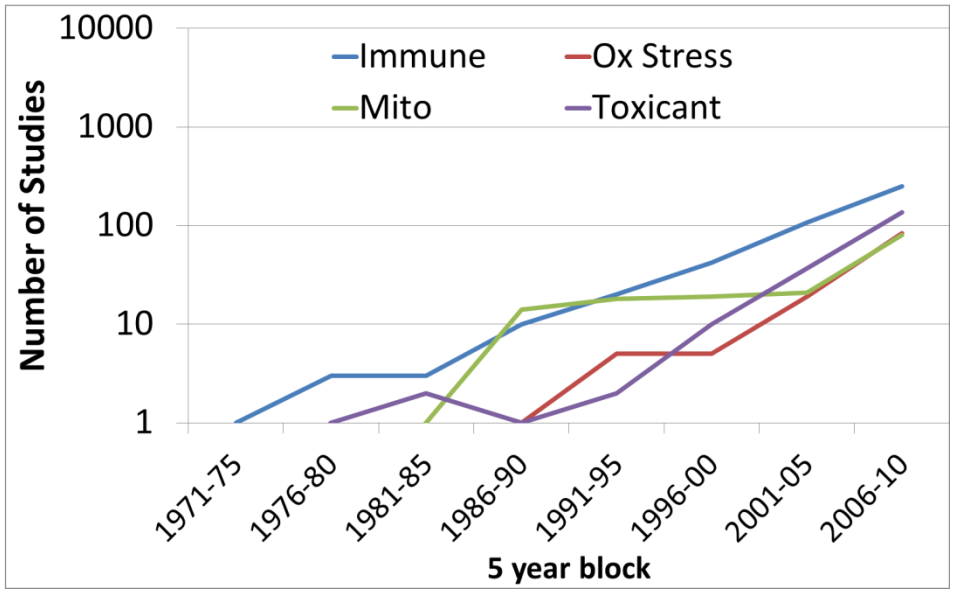
REVIEW

A review of research trends in physiological abnormalities in autism spectrum disorders: immune dysregulation, inflammation, oxidative stress, mitochondrial dysfunction and environmental toxicant exposures

DA Rossignol[1] and RE Frye[2]

[1]*International Child Development Resource Center, Melbourne, FL, USA and* [2]*Arkansas Children's Hospital Research Institute, University of Arkansas for Medical Sciences, Little Rock, AR, USA*





IACC
INTERAGENCY AUTISM
COORDINATING COMMITTEE

Meeting of the IACC

Committee and Panel Discussion

Meeting of the IACC

Morning Agenda – Continued

11:00 **Meeting Report: Environmental Epigenetics Symposium**

Jill Escher
Escher Fund for Autism

Alycia Halladay, Ph.D.
Senior Director, Environmental and Clinical Sciences
Autism Speaks

11:30 **Rethinking Nonverbal Autism**

Portia Iversen
Parent and Advocate

12:15 PM **Lunch**

IACC
INTERAGENCY AUTISM
COORDINATING COMMITTEE

Meeting of the IACC

Meeting Report: Environmental Epigenetics Symposium

Environmental Epigenetics Symposium

NEW FRONTIERS IN AUTISM RESEARCH

Alycia Halladay, Autism Speaks

Jill Escher, Escher Fund for Autism

Environmental Epigenetics and disease

From discovery.org

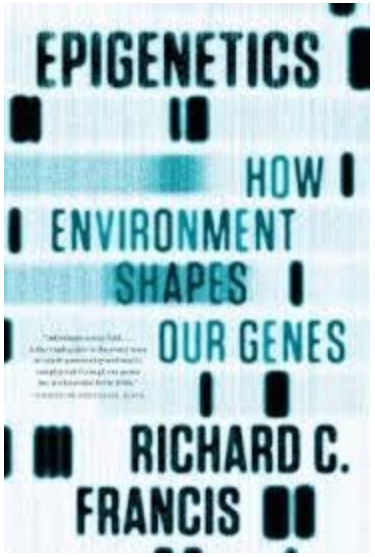
From time.com

Well established link b/w environment and epigenetics

KEYSTONE SYMPOS
on Molecular and Cellular Bio
Accelerating Life Science Discovery

CEHN Research Conference

San Francisco, CA
May 30–June 1, 2012

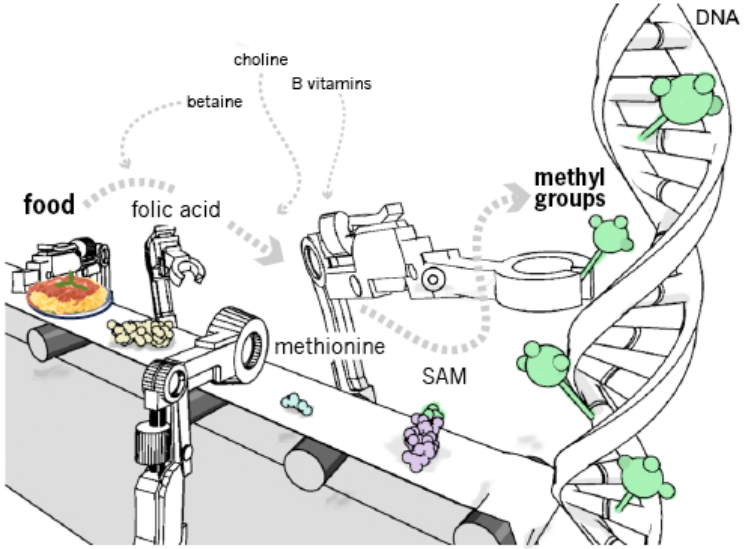


2012

The Contribution *of* Epigenetics *in* Pediatric Environmental Health

Epigenetics as the intersection of gxe

- DNA methylation as a mechanism
- Layering on environment in epidemiology studies
  - Assessing exposures and epigenetic expression
  - Generation F2 - multigenerational
  - Generations F3 and F4
- Animal models
- Cancer, Asthma, NDD



Utility of Twin Designs for ASD

OPEN

Molecular Psychiatry (2013), 1–9

www.nature.com/mp

ORIGINAL ARTICLE

Methylomic analysis of monozygotic twins discordant for autism spectrum disorder and related behavioural traits

CCY Wong[1], EL Meaburn[1,2], A Ronald[1,2], TS Price[1,3], AR Jeffries[1], LC Schalkwyk[1], R Plomin[1] and J Mill[1,4]

Environmental Epigenetics and ASD – scientific conference

- Meeting March 22-23, 2013
- Autism Speaks, Escher Fund for Autism, MIND Institute
- Goals
- Planning/Steering Committee

www.autismepigenetics.org

One Strong Voice

Scientific Conference
March 22-23, 2013

- Background and Mechanisms
- Role of the germline
- Neurodevelopment
- Exposures – examples from the field
- Ethical considerations
- Discussion topics

Environmental Epigenetics Symposium
NEW FRONTIERS IN AUTISM RESEARCH
March 22-23, 2013
UC DAVIS MIND INSTITUTE
AUTISM SPEAKS
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One Strong Voice

Emerging themes from presentation:

#1: More emphasis on genes ***AND*** environment, not on genes ***VERSUS*** environment

- multiple timepoints needed
- different tissues, if possible
- include diversity of exposures
- learn lessons from other disorders or diseases

Emerging themes from presentation

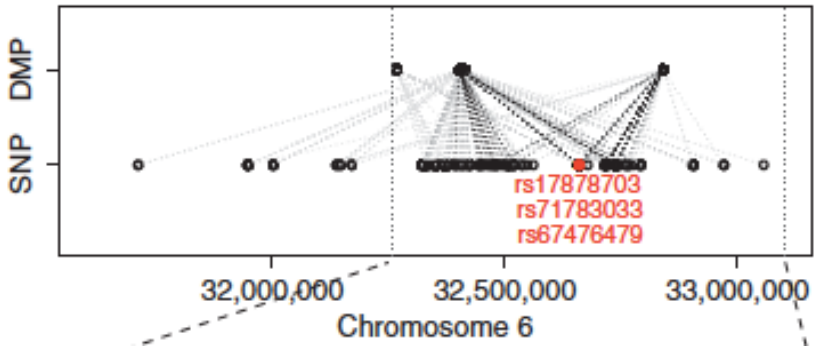
#2 Epigenetics as the moderator of gene/environment interactions

ARTICLES

nature biotechnology

Epigenome-wide association data implicate DNA methylation as an intermediary of genetic risk in rheumatoid arthritis

Yun Liu[1,2,12], Martin J Aryee[1,3,12], Leonid Padyukov[4,5,12], M Daniele Fallin[1,6,7,12], Espen Hesselberg[4,5], Arni Runarsson[1,2], Lovisa Reinius[8], Nathalie Acevedo[9], Margaret Taub[1,6], Marcus Ronninger[4,5], Klementy Shchetynsky[4,5], Annika Scheynius[9], Juha Kere[8], Lars Alfredsson[10], Lars Klareskog[4,5], Tomas J Ekström[5,11] & Andrew P Feinberg[1,2,6]



Environmental Epigenetics Symposium
NEW FRONTIERS IN AUTISM RESEARCH
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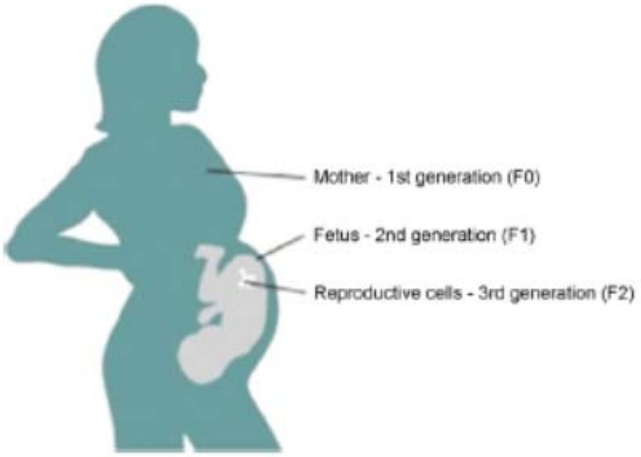
Emerging themes from presentation:

#3: Lifecourse should include the germline

- Germ cells susceptible to environmental exposures
- Multigenerational studies finding effects
- Double hit – where is the cause?



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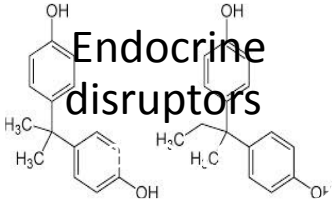
Are we looking in the right place?



Endocrine disruptors

Reproductive health

Subfertility?

LINKS TO AUTISM?

Environmental Epigenetics Symposium
NEW FRONTIERS IN AUTISM RESEARCH
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AUTISM SPEAKS

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Emerging themes from presentation:

#4: These issues cannot be solved by one area of research

- epidemiology
- animal model
- molecular approaches
- genetics
- toxicology

Environmental Epigenetics Symposium
NEW FRONTIERS IN AUTISM RESEARCH
March 22-23, 2013
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AUTISM SPEAKS
One Strong Voice

Acknowledgments

- **David Amaral, *PhD, MIND Institute***
- Lisa Chadwick, PhD*, NIEHS*
- Amander Clark, *PhD, UCLA*
- **David Crews, *PhD, University of Texas at Austin***
- Lisa Croen, PhD, *Kaiser Permanente CA*
- Dana Dolinoy, *PhD, University of Michigan*
- **Jill Escher, *Escher Fund for Autism***
- **Dani Fallin, *PhD, Johns Hopkins***
- Andrea Gore, *PhD, University of Texas at Austin*
- **Janine LaSalle*, PhD, UC Davis***

Acknowledgments

- Joachim Hallmayer, *Stanford University*
- Isabelle Mansuy, *University of Zurich*
-Nancy Press, *PhD, Oregon Health Sciences University*
- June Reinisch, *PhD* & Erik L. Mortensen, *CanD, University of Copenhagen*
- Emilie Rissman, *PhD, University of Virginia*
- Michael Skinner, *PhD, Washington State University*
- Adam Urato, *MD, Tufts University*
- Rosanna Weksberg, *MD PhD, University of Toronto*
- Tracey Woodruff, *PhD, UCSF*

What does this mean for families with autism, or for future families?

Model of prevention, in addition to intervention

Germline Disruption in Historical and Personal Context

Jill Escher, Escher Fund for Autism *jill.escher@gmail.com*

Presentation to Interagency Autism Coordinating Committee, July 9, 2013

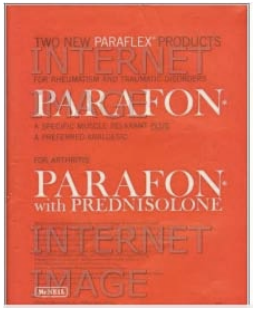
Thesis

Pharmaceutical and other novel exposures of the recent past may have impaired germline development in a subset of people, contributing to the rising incidence of neurodevelopmental abnormality, including ASDs.

Use of prenatal pharmaceuticals surged in the mid-century

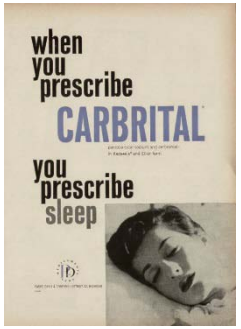
New synthetic drugs for pregnancy proliferated, and the placenta was mistakenly considered a barrier to harm. *Some examples:*

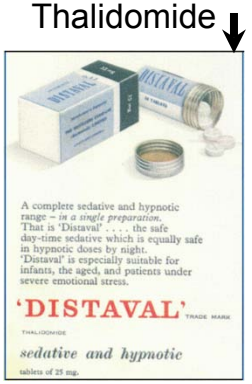
DES



Synthetic Hormones

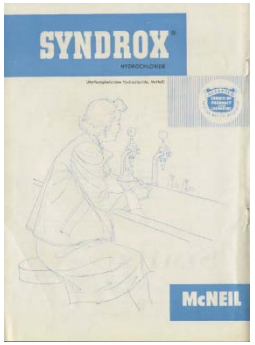
Thalidomide

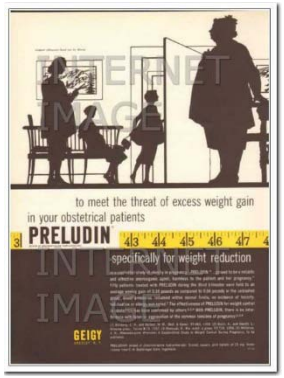


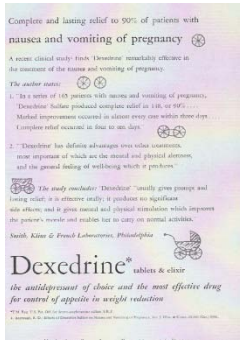


Sedatives/Hypnotics

Anti-Nausea Drugs







Weight Loss Drugs, etc....

Drug use, early pregnancy only, 50,282 mother-child pairs, 1958-65

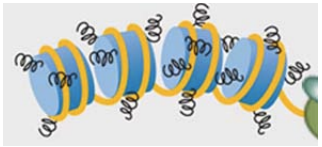
Anti-nausea, antihistamines	6,194	12%
Amphetamines, autonomic NS drugs	4,657	9%
Sedatives, tranquilizers, antidepressants	3,122	6%
Hormone drugs (synthetic and natural)	2,327	5%
Analgesics, antipyretics (aspirin)	15,909	32%
Immunizing agents (polio vaccine)	9,222	18%
Antimicrobials, antiparasitics (antibiotics, sulfa)	8,088	16%
Caffeine, xanthine derivatives	5,773	11%
Anesthetics, relaxants	2,657	5%
Bromides, flourides, iodides, certain vitamins	2,542	5%
Cough medicines	948	2%
Gastrointestinal drugs	440	0.9%

Heinonen, Collaborative Perinatal Project, 1977

Epigenetic germline effects?

"It is widely accepted that endocrine-disrupting chemicals can induce molecular epigenetic changes, such as DNA methylation and histone modification."

—David Crews, PhD, and Andrea Gore, PhD, Univ. of Texas, Austin (Env. Health Perspectives 2011, 119: 1-3).



"The epigenome ... is most vulnerable during early development when the DNA synthetic rate is high and when the germline is undergoing extensive epigenetic remodeling."

— Dana Dolinoy, PhD, University of Michigan, (Letter to FDA 2013)

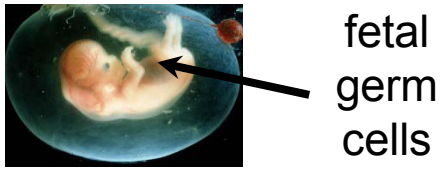
"[E]ndocrine disruptors ... have been shown to exhibit transgenerational effects in animal models relevant to ASD."

—Janine LaSalle, PhD, UC Davis (Journal of Human Genetics 2013, 1–6)

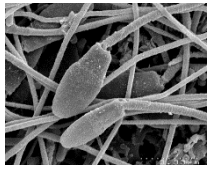
Some windows of germline vulnerability

- Pre-conception, fertilization, and early embryo

- Fetal germ cell development, (most susceptible period)

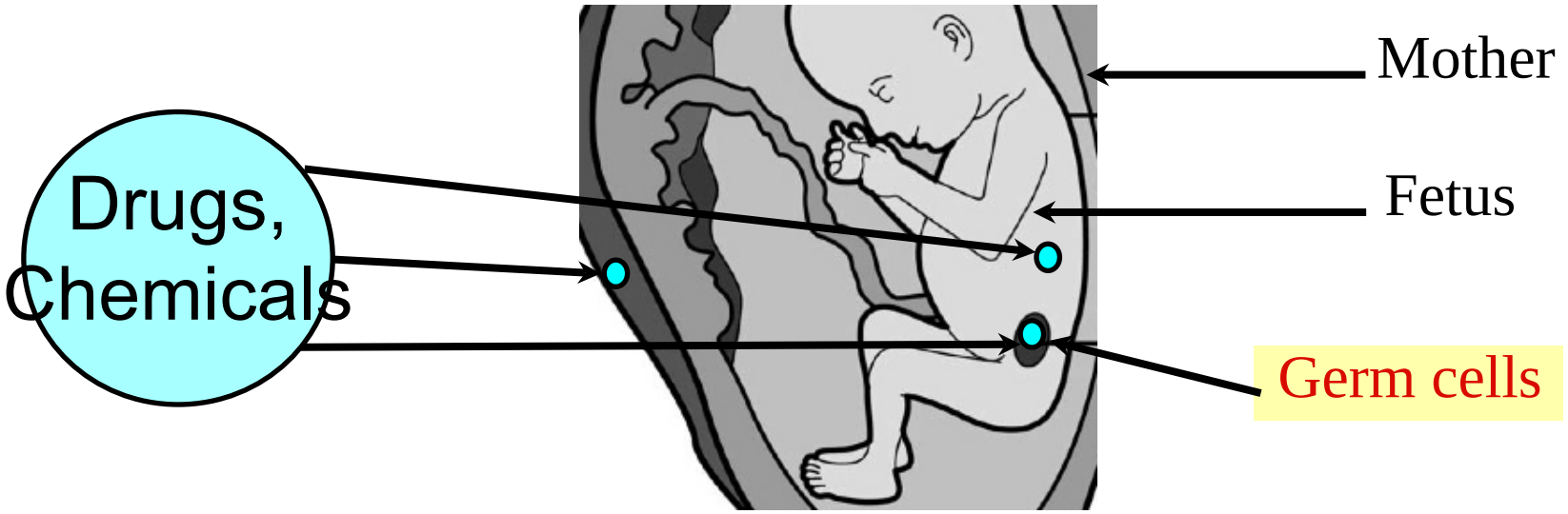


- Spermatogenesis through male's lifetime



Note that some chemicals, such as dioxin, can persist in tissue for years or decades, affecting sperm or egg long after initial exposure. *Exposure need not necessarily coincide with window of susceptibility.*

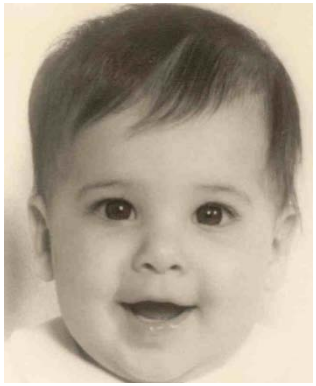
Pregnancy exposures can affect three generations at once



- Paradigm shift: Drugs taken by pregnant women can affect grandchildren.
- Somatic v germ cells: Different effects in different generations.
- Latency period: Pregnancy drugs of the 1960s, for example, may cause abnormalities in grandchildren born 1980s-today.

Potential Case Study: Me

- Born 1965 in Los Angeles
- Normal development
- No autism or developmental or psych conditions in ancestry or extended family
- Had three kids: normal conceptions, pregnancies, deliveries, no unusual exposures, no genetic anomalies, normal microarrays.
- Yet two have incapacitating abnormal neurodevelopment. Labeled “idiopathic autism.”

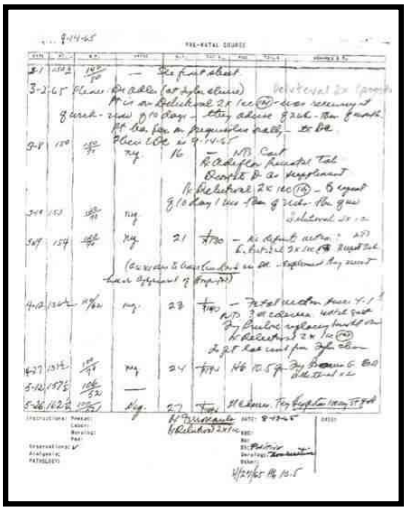


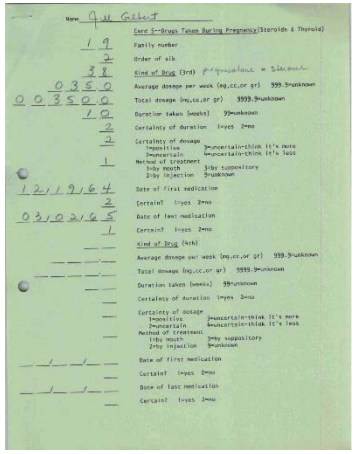
Me

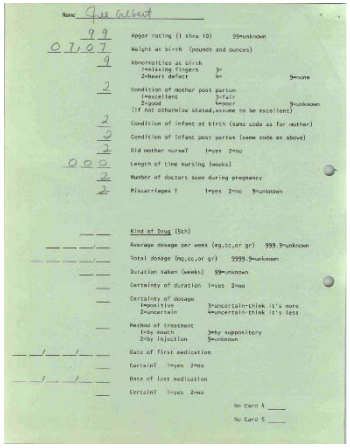
Son, 14

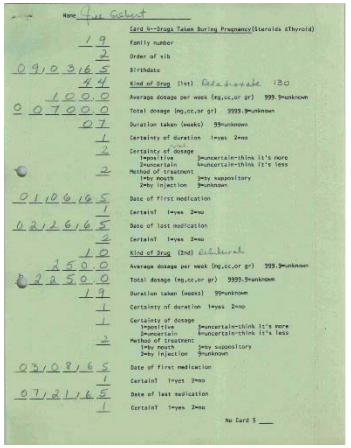
Daughter, 7

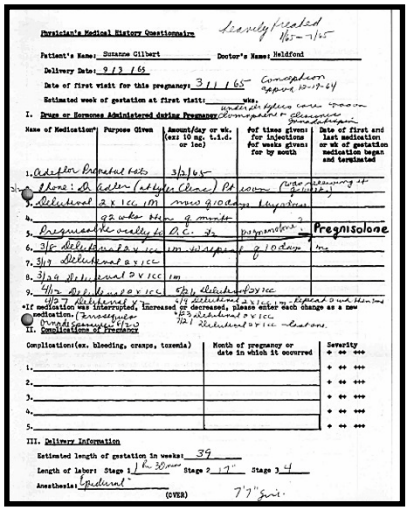
Recently, I obtained several detailed records of my 1965 prenatal exposures











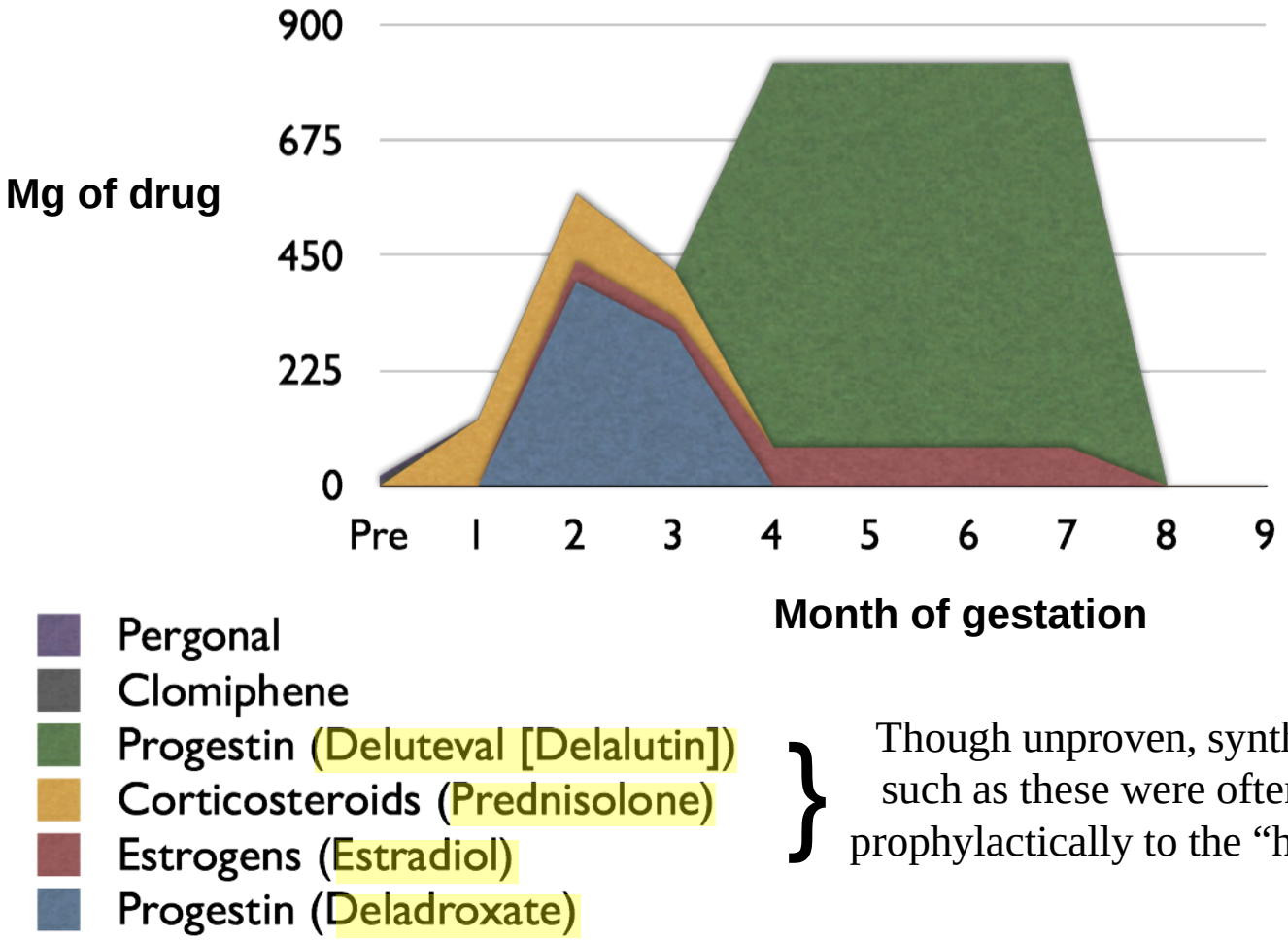
A giant thank you to my parents, the Heldfond Medical Group, Los Angeles, and Dr. June Reinisch, director emerita, the Kinsey Institute.

Access to one's own prenatal records is exceedingly rare.

I had no idea I had been exposed to anything, much less...

A Mix of Synthetic Steroid Hormones

I was prenatally exposed to heavy doses of powerful fake hormone drugs then used in pregnancies considered “at risk”: progestins, estrogens, corticosteroids.



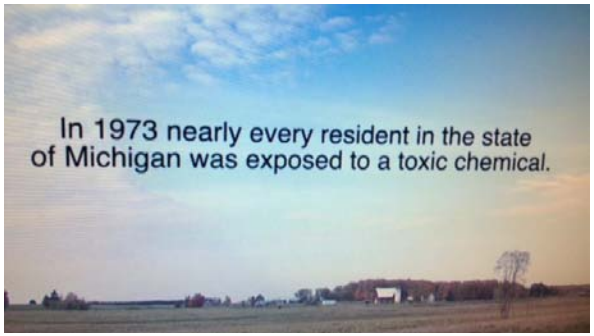
} Though unproven, synthetic hormones such as these were often administered prophylactically to the “habitual aborter.”

We need to know more.

Broader exposures worth studying

Pesticides (DDT)

Agent Orange (dioxin)



Flame retardants

PCBs

Many other candidates from our toxic soup

Smoking

Recreational drugs

Air pollution

Nuclear testing

Superfund sites

Projects We've Kickstarted

- **Epidemiology**: Denmark study to evaluate germline effects of prenatal pharmaceuticals and smoking.

- **Prevention**: Eg, FDA petition to consider impacts of prenatal pharmaceuticals on "weakest link" (germline).

- **Environmental Epigenetics Symposium**: Co-sponsorship with UC Davis MIND Institute and Autism Speaks.

- **History**: Research on history of prenatal pharmaceutical use, 1950s-70s.

- **Medical records**: Efforts to allow all Americans access to their prenatal exposure records.

- **Laboratory studies**: To evaluate effects of synthetic hormone exposure.

Recommendations for Next Phase

IACC to pursue and monitor epigenetics in ASD, including:

- **Epidemiology**:
- Expanding scope of existing and new projects
- Continue longitudinal cohorts
- Genome sequencing and determination of “exposome”
- **Animal models**:
- Test germline impacts of relevant exposures through multiple generations
- Behavioral and molecular assays relevant to autism
- **Assays**:
- Develop high throughput assays for epigenetic markers
- Support ascertainment of ancestral exposures, including feasibility
- **Bioinformatics**: Linking data and resources, incorporate relevant outcomes into NDAR
- **Risk communication**: Ethical, evidence-based communication of risks of exposure

IACC
INTERAGENCY AUTISM
COORDINATING COMMITTEE

Meeting of the IACC

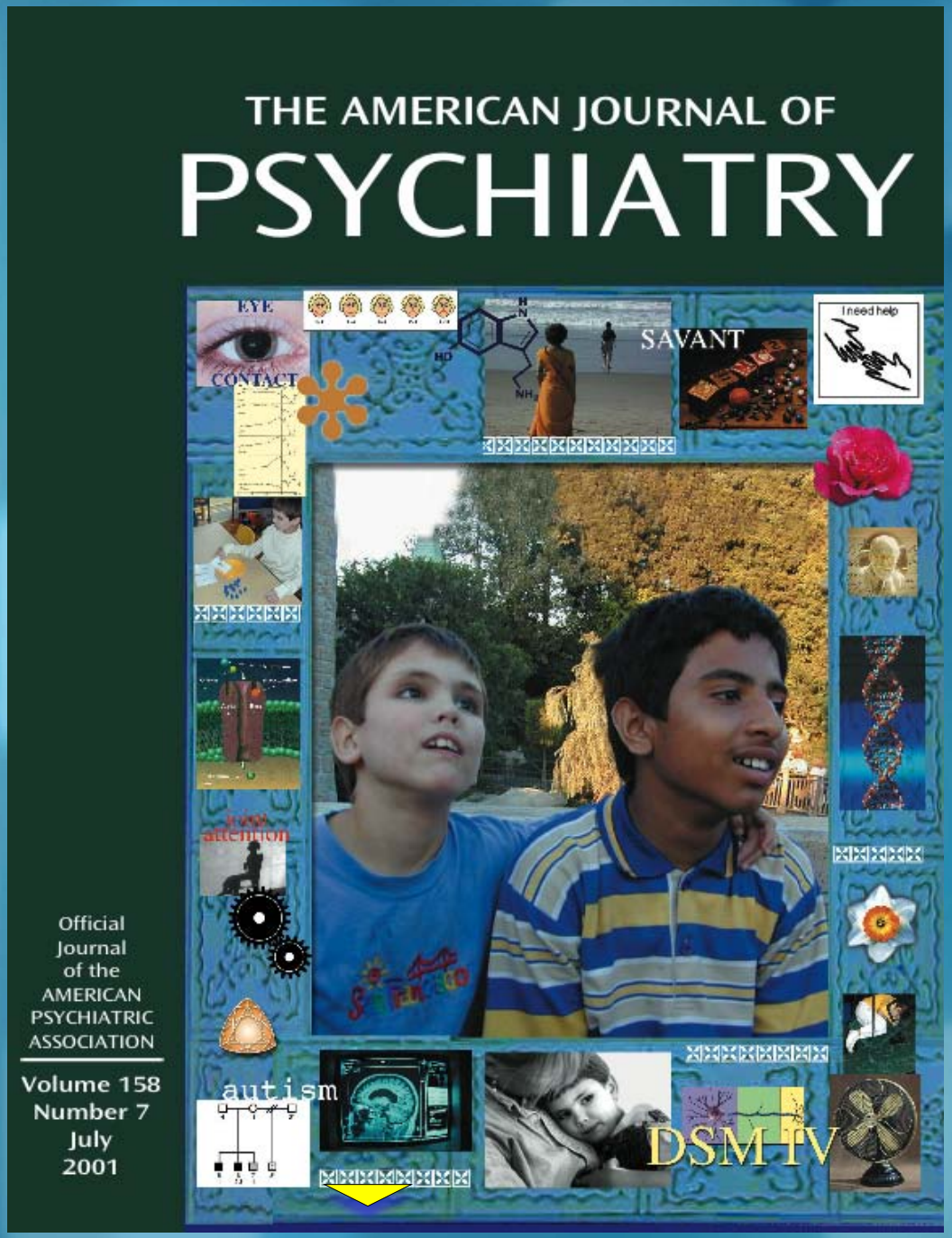
Rethinking Nonverbal Autism

The Forgotten Half of Autism:

Nonverbal and Low-Communicating Individuals with Autism

Portia Iversen
July 9, 2013

For the Interagency Autism Coordinating Committee, NIMH



Timeline 1995:
The Cure Autism Now Foundation is established to promote and fund autism research.

1997

Cure Autism Now establishes the Autism Genetic Resource Exchange (AGRE)

2000

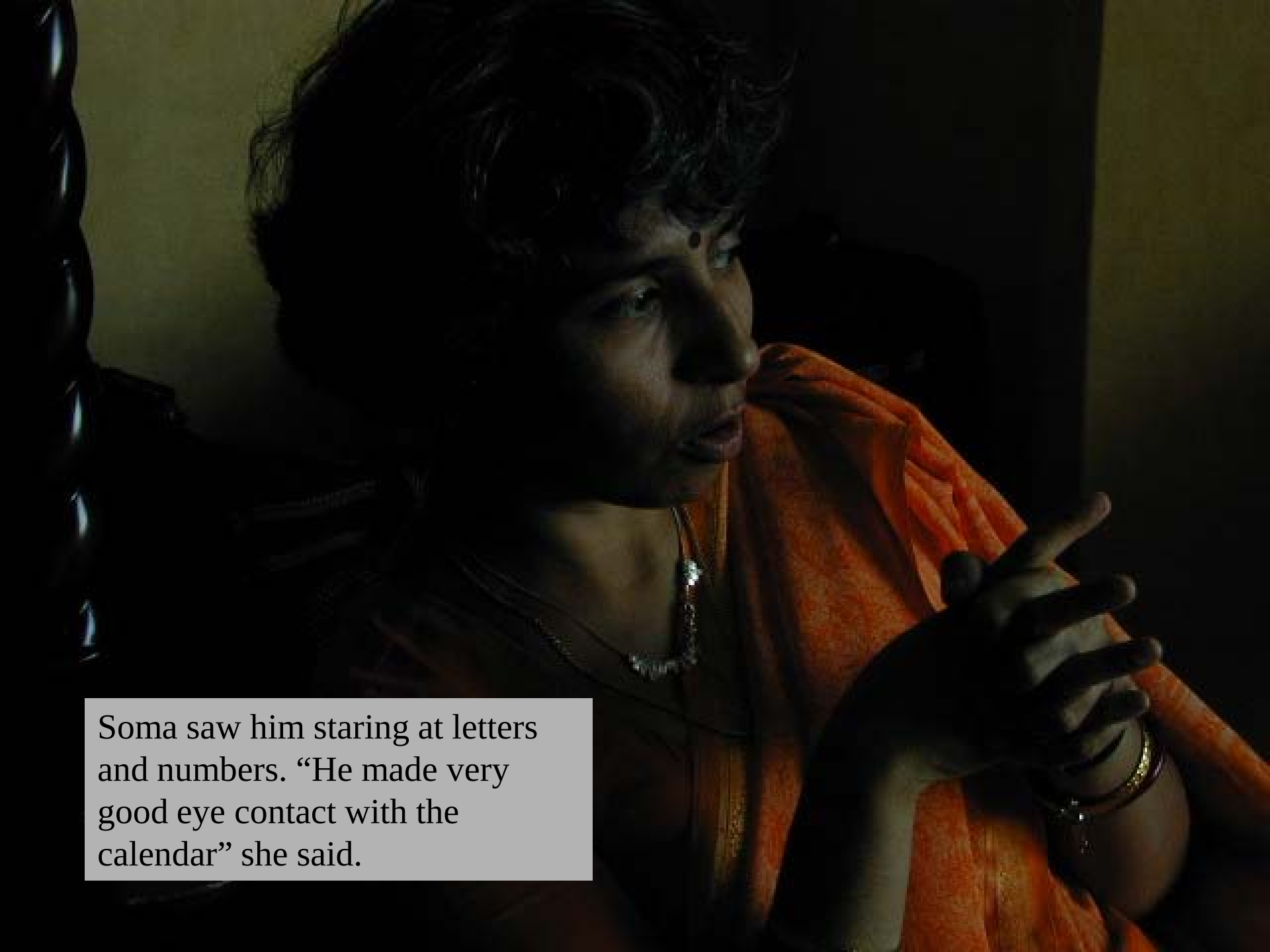
Cure Autism Now establishes the International Meeting For Autism Research (IMFAR)

2000

Cure Autism Now establishes the Innovative Technology for Autism (ITA) initiative

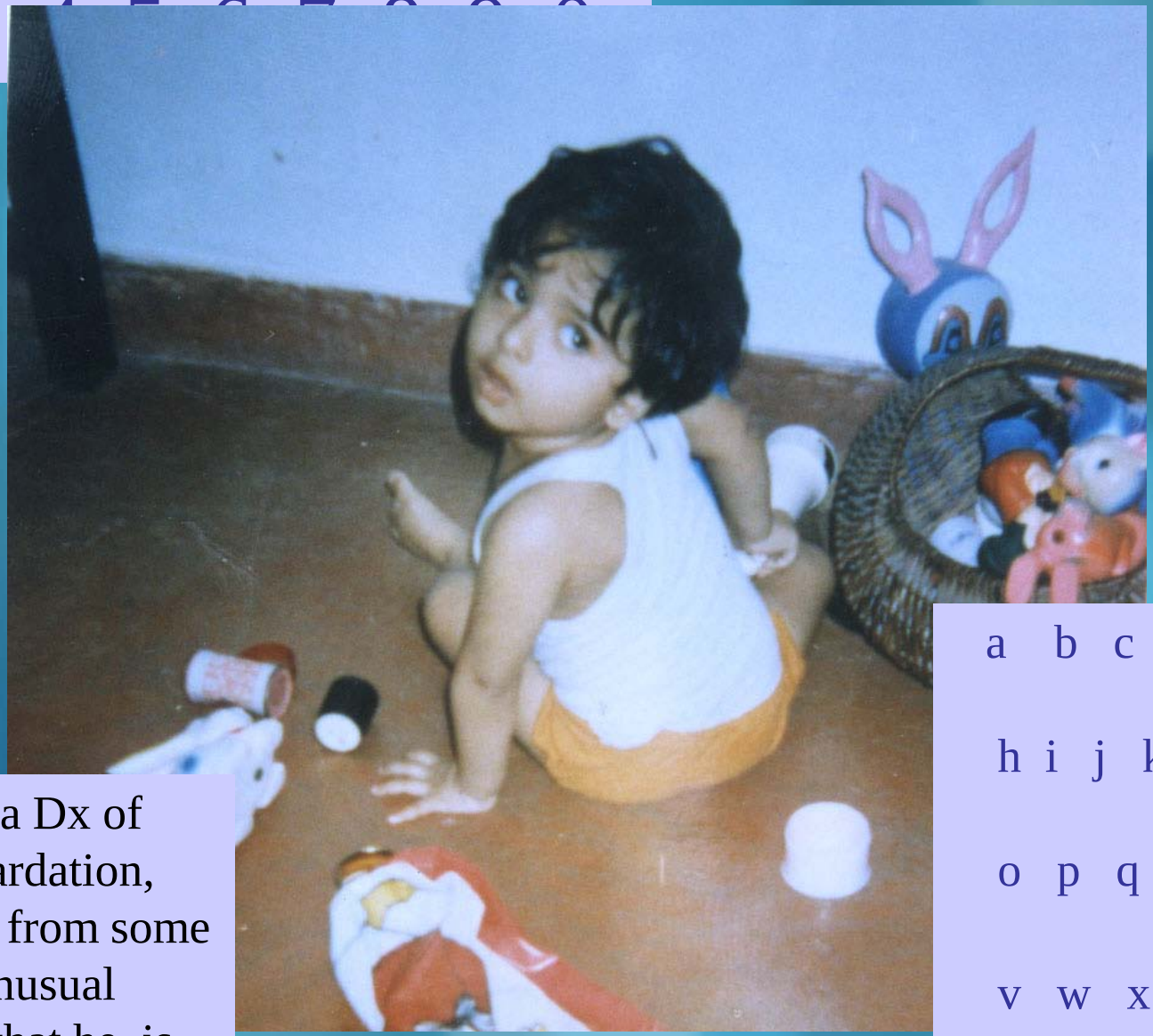
VIDEO:
Dov 4 mo. – 13 yrs

2001



Soma saw him staring at letters and numbers. “He made very good eye contact with the calendar” she said.

1 2 3



a b c d e f g

h i j k l m n

o p q r s t u

v w x y z

In spite of a Dx of mental retardation, Soma sees from some of Tito's unusual activities, that he is capable of learning.

Over several years Soma develops her method which consists of constant verbal, visual and motor prompts to keep Tito’s attention - eventually she succeeds in she teaching Tito to point at letters, spelling out words.

Some of the labs Tito visited...

UCSF: Merzenich, Bonneh, Houde, and others

UCSD: Courchesne, Ramachandran & Hirstein

UCLA: Zaidel, Kaiser

Stanford: Gillette

George Town U: Eden

Adaptation to one dominant sensory mode

Vision Dominant
(Temple)

Auditory Dominant
(Tito)

Screens out other senses to reduce overload

Is Tito one in a million?

“Listening…”

PORTIA IVERSEN

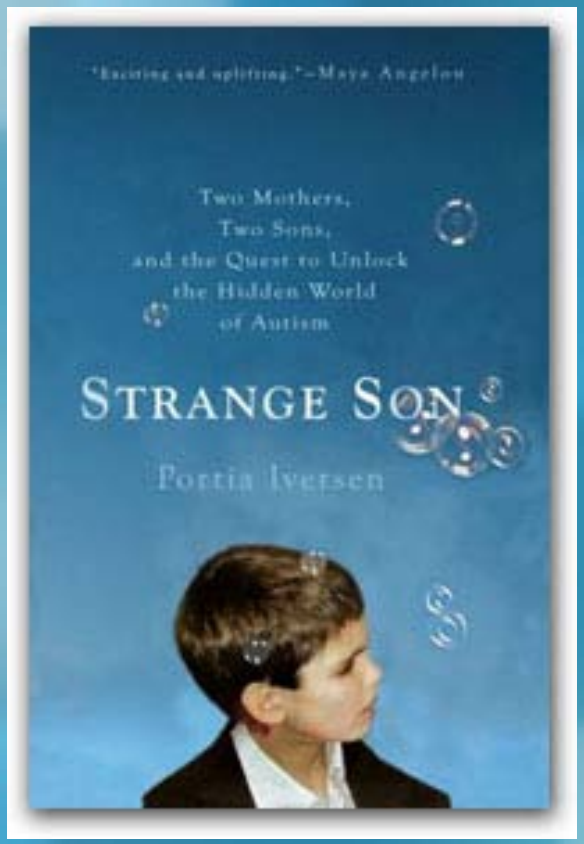
Strange Son

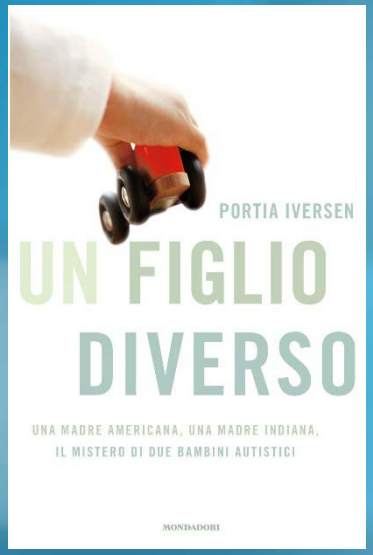
Two Mothers, Two Sons

and the Quest to Unlock

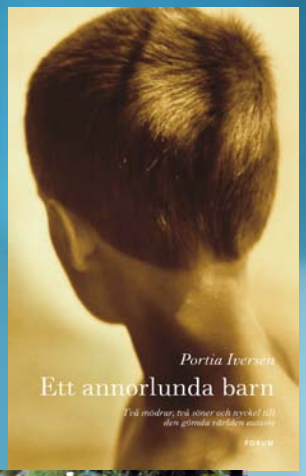
the Hidden World of Autism

2007




PORTIA IVERSEN
UN FIGLIO DIVERSO
UNA MADRE AMERICANA, UNA MADRE INDIANA,
IL MISTERO DI DUE BAMBINI AUTISTICI
MONDADORI


엄마가 지켜줄게
포서 아이버슨
Strange Son


Portia Iversen
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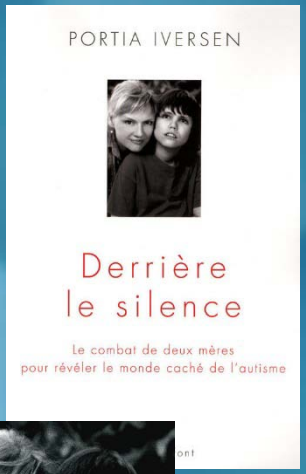
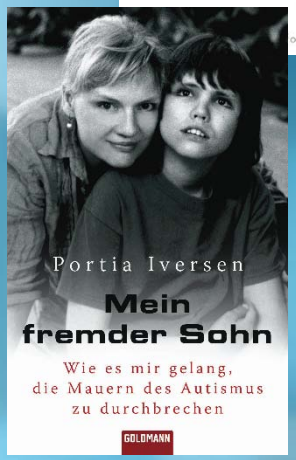
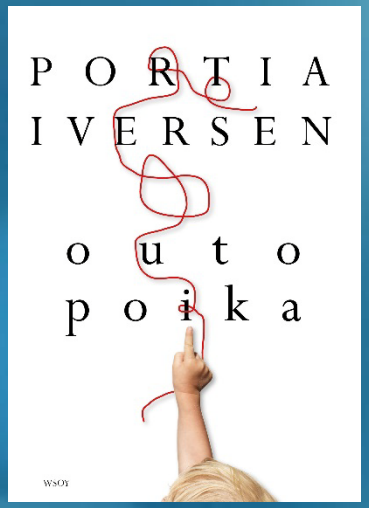

PORTIA IVERSEN
Derrière le silence
Le combat de deux mères pour révéler le monde caché de l'autisme


奇蹟的孩子
STRANGE SON
一段開啟封閉心靈的旅程


Portia Iversen
Mein fremder Sohn
Wie es mir gelang, die Mauern des Autismus zu durchbrechen
GOLDMANN


PORTIA IVERSEN
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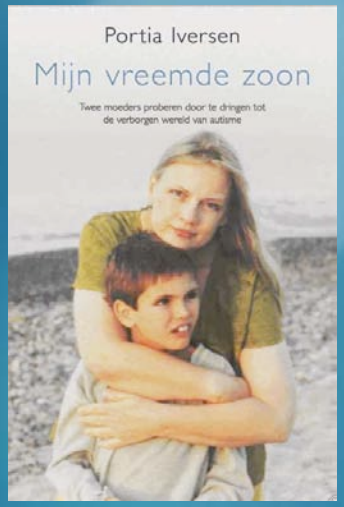
Portia Iversen
Mijn vreemde zoon
Twee moeders proberen door te dringen tot de verborgen wereld van autisme


ぼくは考える木
自閉症の少年詩人と探る脳のふしぎな世界
ポーシャ・アイバーセン
小川敏子[訳]
早川書房


בן מוזר

VIDEO: When World’s Collide

“Clearly words like "nonverbal" and "low functioning" just don't cut it. Watching Temple Grandin stumped by Tito's use of language is just amazing. What I am trying to understand is how many Titos are out there in this "nonverbal" population.

But at a more basic level, this calls into question some of our basic models of verbal communication as a proxy for sociality.”

- Tom Insel

The Problem:

Literature search reveals:

No standardized terminology or taxonomy for ‘nonverbal’ phenotype therefore cannot assess what research has been done.

No distinction between these phenotypes:

- functionally nonverbal (low-communicating)
- physically nonverbal (speech praxis)
- cognitively nonverbal (mental retardation)

Example:

Searching the IACC Autism Spectrum Disorder Research Portfolio Analysis (2010):

Using the terms “nonverbal” and non-verbal”

Out of 139 projects listed, only 13 actually have anything to do with nonverbal autism.

How many are there?

•The percentage of the ASD population that is nonverbal or low-communicating is unknown.

• Best guess is 25% are nonverbal (cannot speak) and *at least* 25% can physically speak but don't have functional language.

•That means we are talking about 25 – 50% of the spectrum.

Yet almost nothing is known about these individuals, they are not included in research and the most basic questions remain unanswered.

While autism research and the development of interventions has increased dramatically over the past 20 years -- **our understanding of nonverbal autism has remained unchanged**.

This is not acceptable.

Rethinking the Model of Nonverbal Autism:

Recent autism genetic research (ie role of CNVs, common and rare variants, Sebat, Wigler, etc) suggests tremendous heterogeneity in the etiology of ASD.

This upends the traditional spectrum model that says autism is a disorder that ranges from severe to mild, though some subgroups will likely fit a spectrum model certainly not all will.

ORIGINAL ARTICLE

Array-based comparative genomic hybridisation identifies high frequency of cryptic chromosomal rearrangements in patients with syndromic autism spectrum disorders

M-L J
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Publish
13 July

Sciencexpress Report

Strong Association of De Novo Copy

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Boris Yamrom,[1] Seungtai Yoon,[1] Alex Krasn
Yoon-Ha Lee,[1] James Hicks,[1] Sarah J Spence
Ledbetter,[2] Peter K. Gregersen,[5] Joel Bregma
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30. The research at the University of Iowa was supported by NASA through contract 1279973 with the Jet Propulsion Laboratory.

Supporting Online Material

www.sciencemag.org/cgi/content/full/1138562/DC1
SOM Text
Figs. S1 to S8
References

7 December 2006; accepted 7 March 2007
Published online 22 March 2007;
10.1126/science.1138562
Include this information when citing this paper.

Strong Association of De Novo Copy Number Mutations with Autism

Jonathan Sebat,[1]* B. Lakshmi,[1] Dheeraj Malhotra,[1]* Jennifer Troge,[1]* Christa Lese-Martin,[2] Tom Walsh,[3] Boris Yamrom,[1] Seungtai Yoon,[1] Alex Krasnitz,[1] Jude Kendall,[1] Anthony Leotta,[1] Deepa Pai,[1] Ray Zhang,[1] Yoon-Ha Lee,[1] James Hicks,[1] Sarah J. Spence,[4] Annette T. Lee,[5] Kaija Puura,[6] Terho Lehtimäki,[7] David Ledbetter,[2] Peter K. Gregersen,[5] Joel Bregman,[8] James S. Sutcliffe,[9] Vaidehi Jobanputra,[10] Wendy Chung,[10] Dorothy Warburton,[10] Mary-Claire King,[3] David Skuse,[11] Daniel H. Geschwind,[12] T. Conrad Gilliam,[13] Kenny Ye,[14] Michael Wigler[1]†

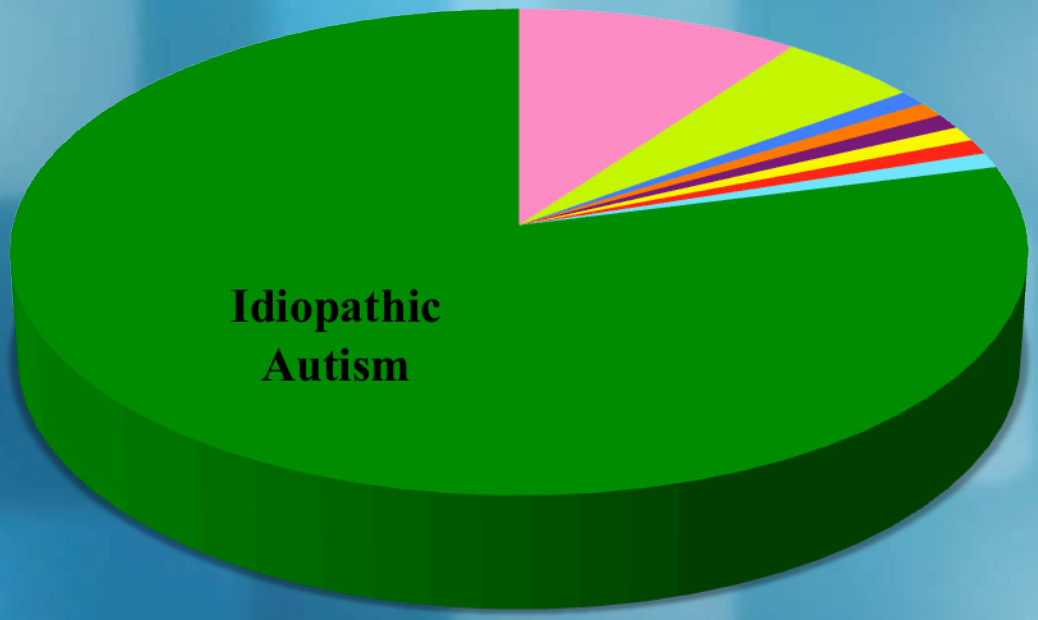
We tested the hypothesis that de novo copy number variation (CNV) is associated with autism spectrum disorders (ASDs). We performed comparative genomic hybridization (CGH) on the genomic DNA of patients and unaffected subjects to detect copy number variants not present in their respective parents. Candidate genomic regions were validated by higher-resolution CGH, paternity testing, cytogenetics, fluorescence in situ hybridization, and microsatellite genotyping. Confirmed de novo CNVs were significantly associated with autism ($P = 0.0005$). Such CNVs were identified in 12 out of 118 (10%) of patients with sporadic autism, in 2 out of 77 (3%) of patients with an affected first-degree relative, and in 2 out of 196 (1%) of controls. Most de novo CNVs were smaller than microscopic resolution. Affected genomic regions were highly heterogeneous and included mutations of single genes. These findings establish de novo germline mutation as a more significant risk factor for ASD than previously recognized.

ASD was needed. We have performed high-resolution genomic microarray analysis on a sample of 264 families to determine the rate of de novo copy number mutation in unaffected and affected children.

Our study focused on a sample of 264 families, including 118 "simplex" families containing a single child with autism, 47 "multiplex" families with multiple affected siblings, and 99 control families with no diagnoses of autism. The majority of patients came from the Autism Genetic Resource Exchange (AGRE) and from the National Institute of Mental Health (NIMH) Center for Collaborative Genetic Studies of Mental Disorders. Additional families were obtained through the authors (T.C.G., J.S.S., J.B., and D.S). Efforts were made at all of the collecting sites to exclude cases of syndromic autism (i.e., those with severe mental retardation or other congenital anomalies) and to exclude known cytogenetic abnormalities. Identities of all subjects and their parents were coded so that analysis could be done blind to affected status while maintaining knowledge of

[1]Cold Spring Harbor Laboratory, 1 Bungtown Road, Cold Spring Harbor, NY 11724, USA. [2]Department of Human Genetics, Emory University School of Medicine, Atlanta, GA

Known causes of 10 – 25% of Autism



- De Novo CNVs, cytogenetic, epigenetic
- Single Mendelian Gene Defects w/ Major Effect (ie Tuberous Sclerosis)
- 100+ Rare Single Gene Mutations
- Chromosomal Cytogenetic Abnormalities (ie Angelman/PraderWillie)
- X-linked traits (ie Rett, Fragile X)
- Detectable Brain malformation (ie Chiari Malformation)
- Nongenetic causes (ie congenital Rubella)
- Documented Environmental Causes
- "Real" Autism (Ideopathic)

The Current Model

Deficits in language and communication

Deficits in social interaction

Restricted and repetitive behaviors

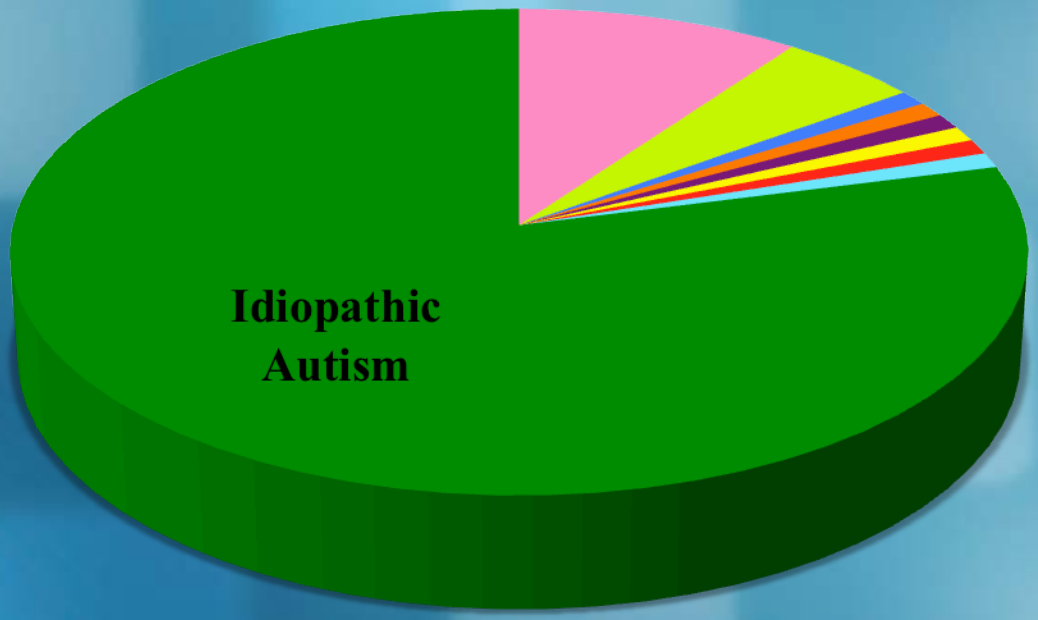
Obsessive, compulsive behaviors

"Autism is a spectrum disorder ranging from mild to severe."

High Functioning Autism: Verbal, average IQ, less severe behavioral and motor symptoms

Low Functioning Autism: Nonverbal or verbal without functional language, mental retardation, more severe behavioral and motor symptoms

Known causes of 10 – 25% of Autism



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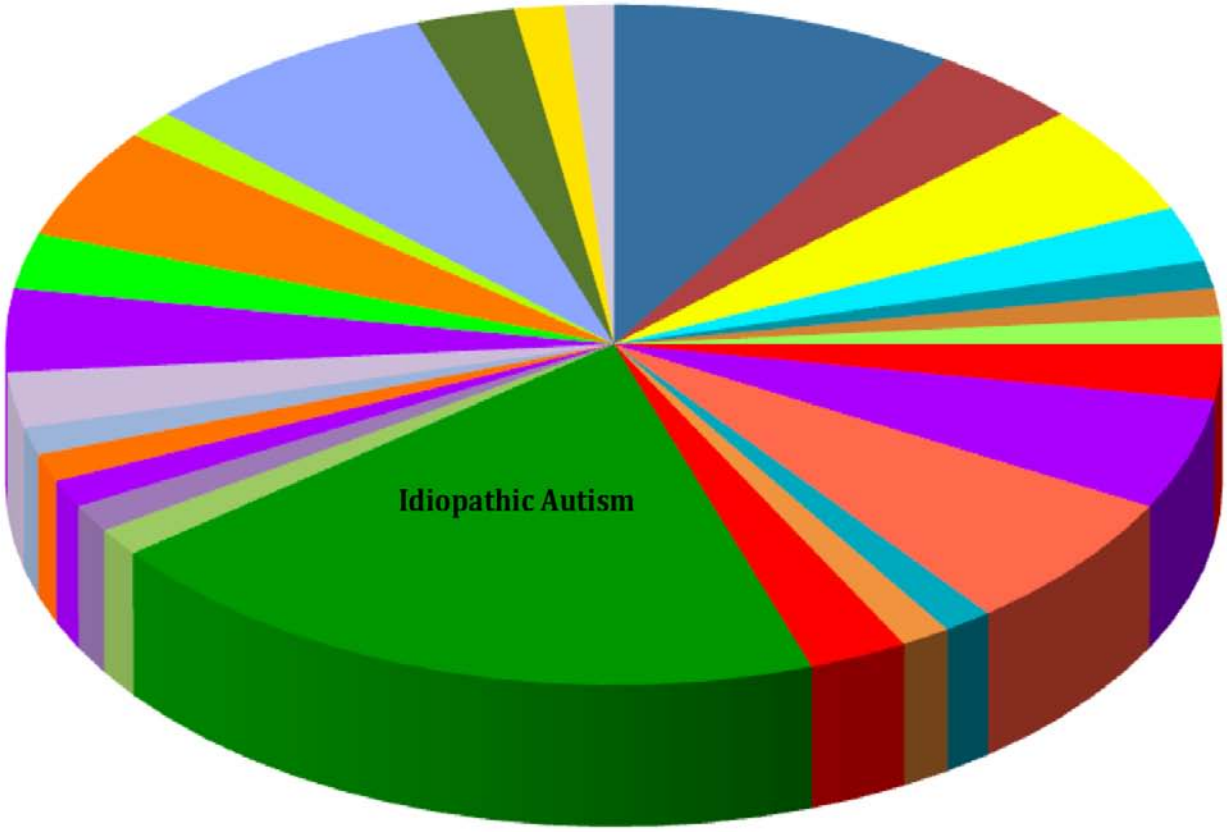
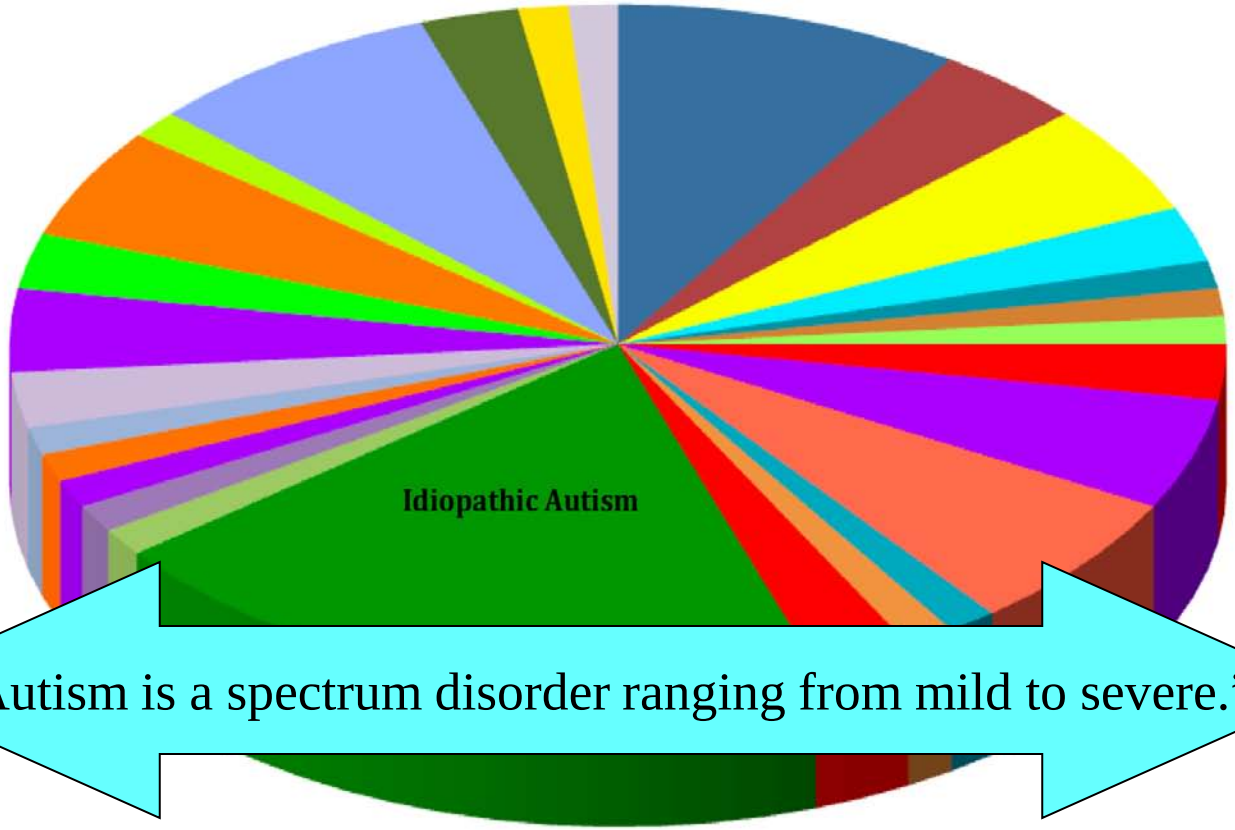
- Documented Environmental Causes
- "Real" Autism (Ideopathic)

Known Causes of 78% of Autism



Known Causes of 78% of Autism



"Autism is a spectrum disorder ranging from mild to severe."

Rethinking the Model:

The nonverbal subgroup is likely to be very heterogeneous.

The nonverbal subgroup is probably not *only* the more severe form of ‘Idiopathic Autism’ but rather a mixture of disorders some that include MR and some that do not, all of which are lumped into the ‘severe’ end of the spectrum by virtue of their profound inability to communicate and severely autistic behaviors.

Rethinking the Model:

Therefore we can no longer equate the absence of communicative ability and presence of “low-functioning” behaviors with the absence of intrinsic cognitive ability.

Lack of expressive language may not mean absence of receptive language…or intelligence.

How many nonverbal children are receiving a life-long diagnosis of mental retardation if they are not speaking by the age of five years old?

Some Key Questions:

- What methods or tools can we develop or adapt to determine if ***receptive language*** is intact in this population?
- What kinds of skills can be taught that would allow us to test cognition in this population?

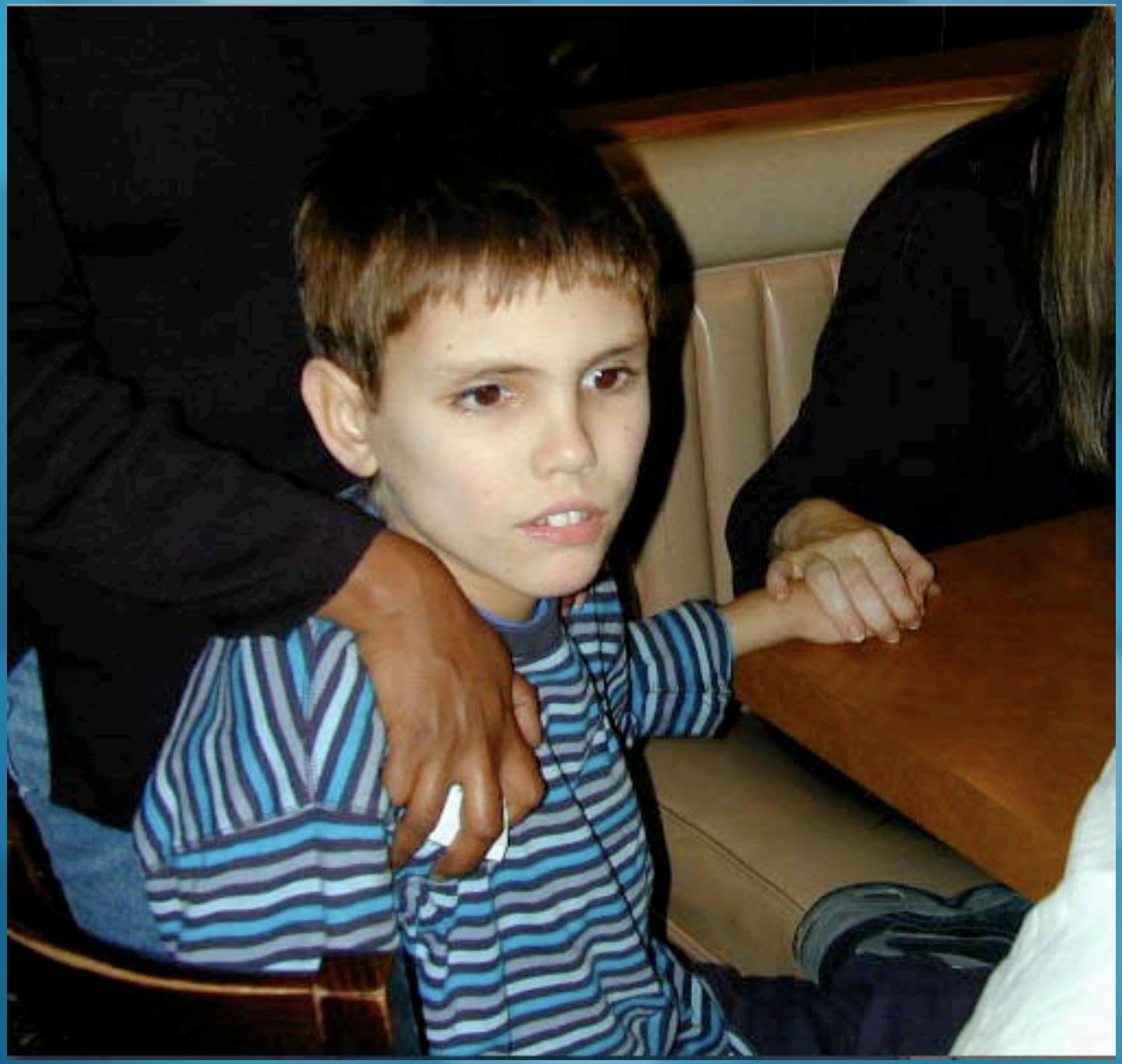
  (ie pointing)
- What cognitive measures can be developed or adapted for use with this population and how?

2 examples of research that could begin to answer some basic questions about nonverbal autism:

- Barry Gordon’s research assesses receptive vocabulary knowledge in low-functioning autism by eye movements, pupillary dilation, and event-related potentials.

- John Connolly uses cognitive event-related brain potentials (ERPs) recorded in a structured protocol to evaluate cognitive function in non-verbal individuals with autism, including individuals with autism who use alternate means of communication. These methods were originally developed for assessing brain-injured people who have received diagnoses of "vegetative state" and "locked-in" syndrome, and are expected to provide a rigorous means of demonstrating speech comprehension at different levels of sophistication and related cognitive functions.

VIDEO:
Dov’s Preparation for his Bar Mitzvah



Meeting of the IACC

Lunch Break

These slides do not reflect decisions of the IACC and are for discussion purposes only.

Meeting of the IACC

Afternoon Agenda

1:15 PM	**Oral Public Comments Session**
1:45	**IACC Discussion of Public Comments**
2:15	**Break**

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Meeting of the IACC

Public Comments

- These slides do not reflect decisions of the IACC and are for discussion purposes only.

Meeting of the IACC

Public Comments Discussion

•These slides do not reflect decisions of the IACC and are for discussion purposes only.

Meeting of the IACC

Break

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Meeting of the IACC

Afternoon Agenda – Continued

2:30-3:30 Panel on Wandering

Presenters: **2:30-2:40 Wandering and Autism: What We Know, What We Need**
Wendy Fournier
President and Founding Board Member
National Autism Association

2:40-2:50 IACC Activities to Address Wandering
Alison Singer
President
Autism Science Foundation and
Member, IACC

2:50-3:10 The Amber Alert Program
Robert Lowery
Executive Director, Missing Children Division
National Center for Missing and Exploited Children

IACC
INTERAGENCY AUTISM
COORDINATING COMMITTEE

Meeting of the IACC

Wandering and Autism: What We Know, What We Need

WANDERING & AUTISM:

What We Know | What We Need

AUTISM&SAFETY

National Autism Association
Wendy Fournier
IACC | July 9, 2013

Click to view the video.

what we know

wandering | an update

October 2010:

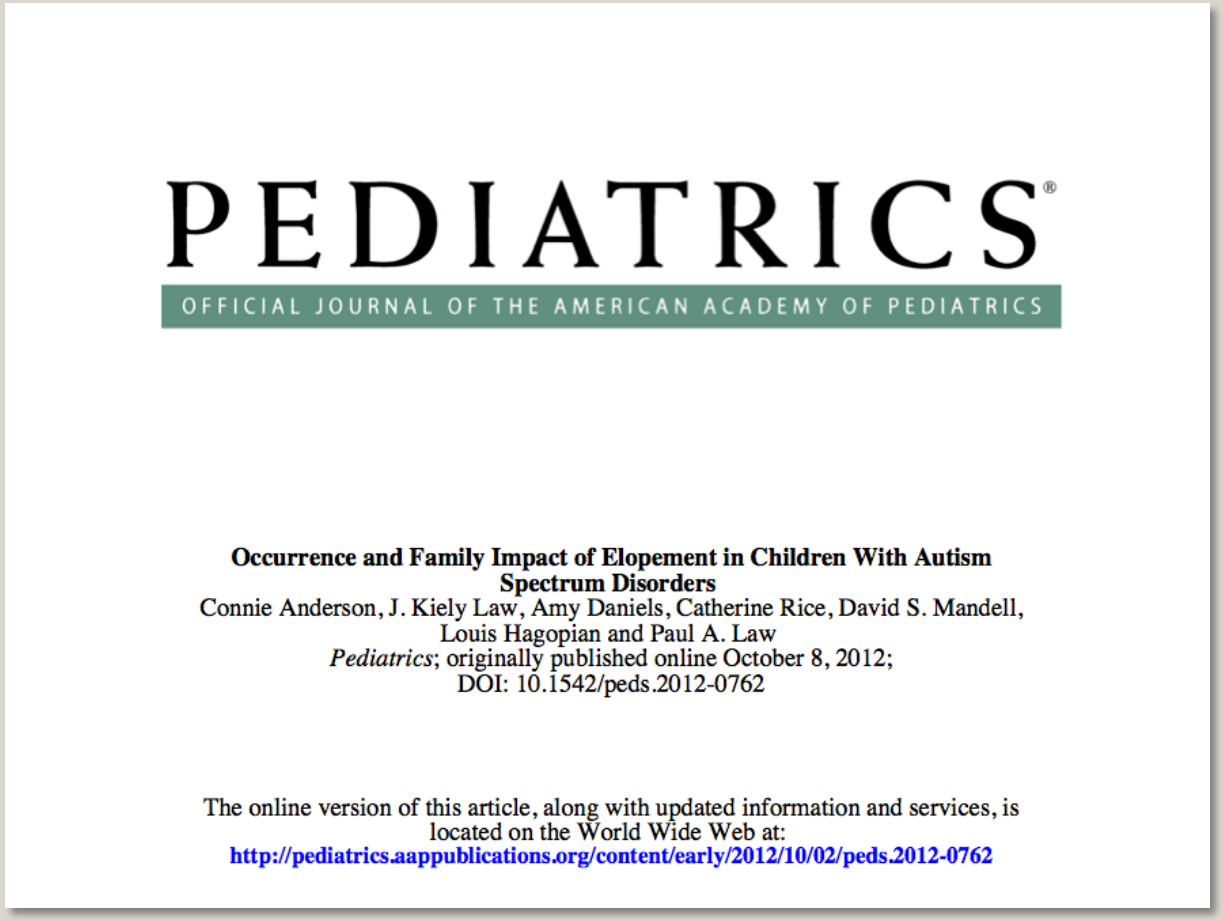
- NAA presentation on wandering to IACC
- Case studies
- AMBER Alert criteria
- Need for Data
- Need for School Response Protocols
- Comparison of resources for Alzheimer's community
- Need for Awareness, Resources, Policies and Training
- Medical Diagnosis Code
- Effect of wandering on families
- Recommended an IACC sub-committee on safety issues

wandering | an update

Since October 2010:

- We have an ICD-9-CM Medical Diagnosis Code - V40.31 (Wandering in Diseases Classified Elsewhere) went into effect in October 2011
- We now have data confirming our concerns (Published in Pediatrics.)
- Feb. 2011 Letter from IACC to Secretary Sebelius with multiple recommendations including the need for an emergency alert system, the Secretary responded that she would “give serious consideration to the recommendations”

Wandering Data: *Occurrence and Family Impact of Elopement in Children With Autism Spectrum Disorders, 2012*



PEDIATRICS®
OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

Occurrence and Family Impact of Elopement in Children With Autism Spectrum Disorders

Connie Anderson, J. Kiely Law, Amy Daniels, Catherine Rice, David S. Mandell, Louis Hagopian and Paul A. Law

Pediatrics; originally published online October 8, 2012;
DOI: 10.1542/peds.2012-0762

AUTISM WANDERING/ELOPEMENT: STATISTICS

- **Roughly half, or 49%,** of children with autism attempt to elope from a safe environment, a rate nearly four times higher than their unaffected siblings
- More than **one third of children** with autism who wander are never or rarely able to communicate their name, address, or phone number
- **Half of families with elopers** report they had never received advice or guidance about elopement from a physician or other professional

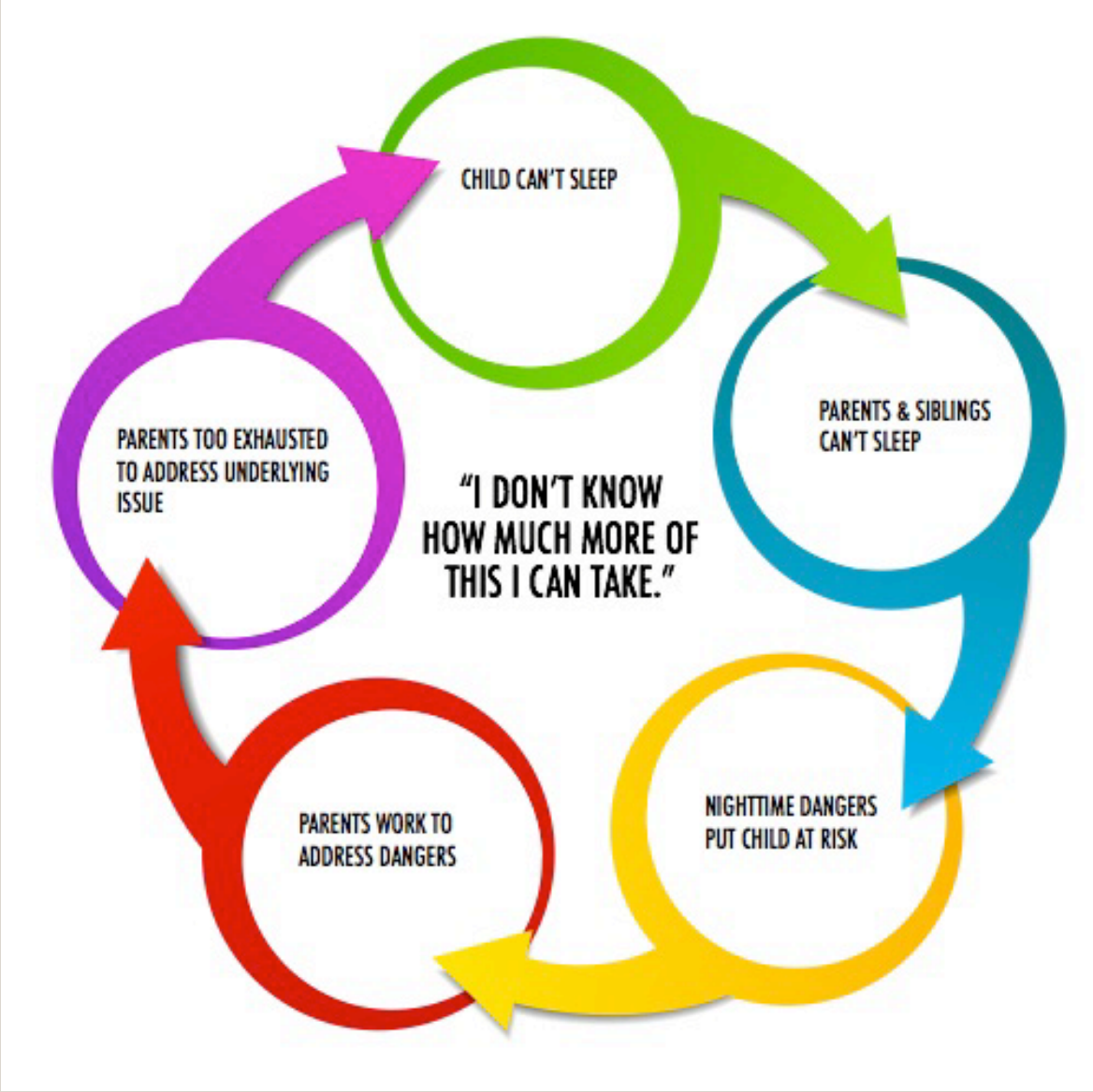
Wandering: Effects On The Family

Living under great stress; Lowered quality of life; Unable to leave home; **Sleep deprivation**; Lack of support/understanding/resources; Fear of accusations of neglect - CPS or Police involvement

- **58%** report wandering/elopement as the most stressful of ASD behaviors
- **62%** of families with children who elope were prevented from attending/enjoying activities outside the home due to fear of wandering
- **40% of parents had suffered sleep disruption due to fear of elopement**

Interactive Autism Network Research Report ASD Elopement, 2011

effects on family



vicious risk cycle

Autism Wandering/Elopement Lethal Outcome Cases from 2009 to 2011:

- accidental drowning accounted for 91%
- 68% died in a nearby pond, lake, creek or river
- 23% were in the care of someone other than a parent
- lethal outcomes in ASD wandering/elopement in girls were twice as high than in boys

Lethal Outcomes In Autism Spectrum Disorders (ASD) Wandering/Elopement; Lori McIlwain, Wendy Fournier Jan 2012

Wandering Occurs Across All Settings and Under All Types of Supervision, Including:

- Homes
- Schools, Daycares, Summer Camps
- Residential and Day Program Facilities
- Public Places, Parks, Camp Sites, Hiking Trails
- Under care of parents, grandparents, siblings, relatives, babysitters, neighbors & friends, camp counselors, teachers/aides, therapists, service professionals

Based On NAA's Monitoring Of Missing Person Cases, Autism-related Wandering Incidents Happen Most:

- During warmer months – seasonal transitions
- During holidays such as Mother's Day, Memorial Day, Father's Day, Fourth of July, Labor Day, and other warm-climate holidays
- During family gatherings, parties, outdoor activities
- Camping & hiking outings
- Visits to non-home settings, such as a friend's home or vacation setting
- After a family moves to a new home
- When adjustments have been made to a home to accommodate warmer weather, especially window screens, window fan units, A/C units and screen doors.
- During classroom transitions from one classroom to another, or during other transitions.
- During times of stress or when escalation triggers arise (typically the child/adult will bolt)

prevention resources

prevention resources

NAA Initiatives

- Established the Big Red Safety Box Program in 2011 providing 7,500 families with prevention tools and educational materials
- Created free toolkits for caregivers and first responders available at AWAARE.org
- Provided $100,000 worth of grants to law enforcement agencies for Project Lifesaver Tracking equipment
- Helped fund and write the parent questionnaire for the wandering study published in *Pediatrics*
- Worked with the National Center for Missing & Exploited Children on search-and-rescue guidelines specific to children with special needs
- Published a white paper on lethal outcomes related to wandering
- Reached out to YMCA headquarters for a listing of Y's across the country that provide special-needs swimming lessons
- First-responder, social worker and parent training in the U.S. and Canada
- Give A Voice – providing a way for kids to help keep themselves safe

prevention resources

BIG RED SAFETY BOX

prevention resources

From a Mom:

“My son’s RoadID tag on his shoe from The Big Red Safety Box just brought him home safely after he wandered. I have never been more grateful.”

SEARCH WATER FIRST

TREAT EACH CASE AS CRITICAL

Case Study: Extraordinary Non-Lethal Outcome

- Joshua Robb – Age 8
- San Bernardino County, CA
- September 2011
- Squeezed through the metal bars of his school playground and ran into a nearby forest.
- Missing overnight during lightning storms.
- Dehydration was noted.
- **The boy's favorite music was played to draw him to safety.**

Searching for individuals with Autism presents unique challenges for S&R personnel – training is vitally important!

News | Police & Fire

Marlboro Officer Uses Autism Training To Find Missing Girl

Sgt. Steve Levy used the knowledge he gained from Autism Shield Training to find a missing girl in Marlboro.

Posted by Kaitlyn Anness (Editor), July 20, 2012 a

6 Comment • Recommend •

On June 6, a young autistic girl went missing from her Marlboro home. found her two streets away in a nearby resident's pool.

training

U.S. NEWS

CHANGE TEXT SIZE

AUTHOR

Laura Colarusso

Follow @LauraColarusso

Ray Gardner Used Autism Training To Find William LaFever

Jul 14, 2012 12:00 AM EDT

Utah Deputy Sheriff Ray Gardner sat in on a lecture about missing autistic children by chance, never thinking he would put its lessons to use. He tells Laura Colarusso how it helped preserve a man's life.

Two months ago, Ray Gardner, a deputy sheriff in Garfield County, Utah, was sitting in a lecture about missing autistic children at the Utah Search and Rescue Association's annual training convention. He remembers thinking at the time that the material was interesting, but he probably wouldn't have any use for it.

"I couldn't even think of anybody I knew that had autism," Gardner said during a telephone interview. "I certainly didn't think the training would have a bearing on any upcoming search I would be on."

Fast forward to July 12, and Gardner found himself relying on the lessons he learned in the class–specifically the fact that individuals with autism are drawn to water. So when he got the call that he'd be the point man on a search and

what we need

wandering | what we need

Missing children with autism and other developmental disabilities do not fit the current criteria for AMBER Alert.

Silver Alerts can be issued for missing adults.

Case Study: Drowning

- Benjy Heil – Age 7
- Wisconsin Rapids, WI
- June 2007
- Slipped out of his home
- 6-day search ended when Benjy's body was found in a nearby creek
- Benjy had been seen by a neighbor

- **AMBER Alert may have saved Benjy's life**

Case Study: Struck, Killed by Vehicle

- Jack Hensley – Age 5
- Tulsa, OK
- July 2009
- Busy shopping district
- Was struck and killed by an SUV

- **AMBER Alert may have saved Jack's life**

Case Study: Drowning

- Owen Black – Age 7
- Perdido Key, FL
- May 2013
- Was seen by a member of the public who wondered why he was alone on the beach

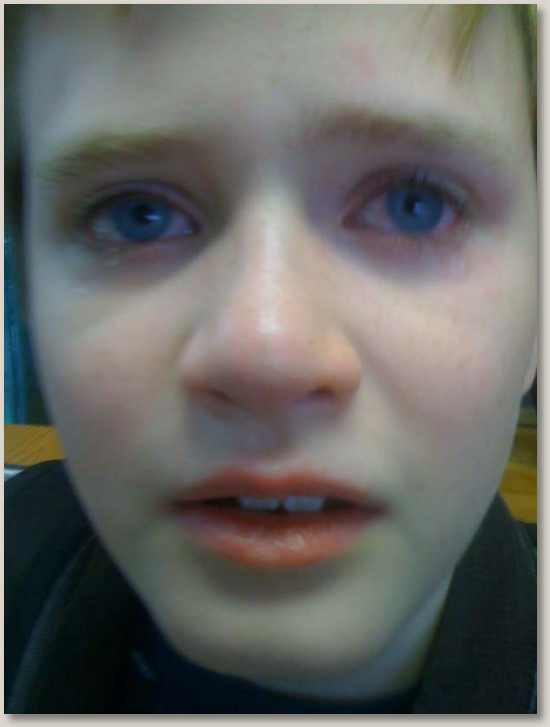
- **AMBER Alert may have saved Owen's life**

Case Study: Drowning

- Mikaela Lynch – Age 9
- Clearlake, CA
- May 2013
- Mikaela disappeared on Mother's Day
- A vehicle drove by Mikaela as she walked down the street
- Her body was found in a nearby creek by divers 3 days later

- **AMBER Alert may have saved Mikaela's life**

Case Study: Stranger and Police Encounter



- Connor – Age 13
- Cary, NC
- Multiple goal-directed and bolting incidents from three different schools
- Will flee following certain triggers
- Two identical school incidents involving unescorted transitions from speech to classroom
- Picked up by a man in a car
- School did not contact police
- Police had to search for where he belonged and thought he was being uncooperative
- **Connor's case emphasizes the need for AMBER Alert, First Responder Training and for DOE to establish federal guidelines for schools mandating immediate notification to law enforcement and parents**

recent headlines

Mantua Creek mud snares 9-year-old with autism; police rescue just in time

By Joe Green/South Jersey Times

on March 24, 2013 at 5:59 PM, updated March 24, 2013 at 6:15 PM

By Joe Green/South Jersey Times

on March 24, 2013 at 5:59 PM, updated March 24, 2013 at 6:15 PM

Print

East Greenwhich Township Patrolmen (left to right) Brett Pfeiffer, William Crothers and Phillip Owens recalled the rescue of a 9-year-old autistic boy from drowning in the Mantua Creek on Saturday afternoon, Sunday, March 24, 2013. (Staff Photo by Joe Warner/South Jersey Times)

EAST GREENWICH TWP. — The minutes ticked by, eternal, it must have seemed, as the flashing lights converged on Billows Drive. A frantic father called again and again for his nine-year-old son, trying to think of where he could have gone on a Saturday afternoon.

The child with autism had wandered off around 3:30 p.m. Police received a report of the missing boy about 15 minutes later.

Little did the father know that the child **was struggling just to keep his head above Mantua Creek's frigid mud**, into which he was sinking.

"Just in time."

recent headlines

Boy with autism rescued from Lake Michigan
April 29, 2013. Northern Michigan authorities located a 6-year-old autistic boy near a cement plant after he became separated from his mother at the Fisherman's Island State Park in Charlevoix County. Silkovskiy was able to get the boy and remove him from Lake Michigan.

Boy With Autism Leaves School, Rides Tricycle on Busy Road
May 8, 2013. A 12-year-old boy with autism left his school and rode a tricycle through a busy road in Yonkers during rush hour Friday.

Passerby pulls floating 5 year-old from North Naples pond
June 19, 2013. A pool technician sitting in his car heard splashing. He ran and pulled the child out using a pole but she wasn't breathing. 911 dispatcher gave CPR instructions and he was able to save the little girl's life.

Missing Autistic Girl From Minnetonka Found Unharmed
June 30, 2013. Officers say she was found unharmed at a creek near County Road, about a half mile away from where she had gone missing.

missing since saturday

Terry Smith

Age 11

Menifee, CA

children lost since last IACC meeting

Drew Howell

Age 2

children lost since last IACC meeting

Alyvia Navarro

Age 3

children lost since last IACC meeting

Christopher Morrison

Age 5

children lost since last IACC meeting

Owen Black

Age 7

children lost since last IACC meeting

Mikaela Lynch

Age 9

children lost since last IACC meeting

Freddie Williams

Age 14

children lost since last IACC meeting

Daven Williams

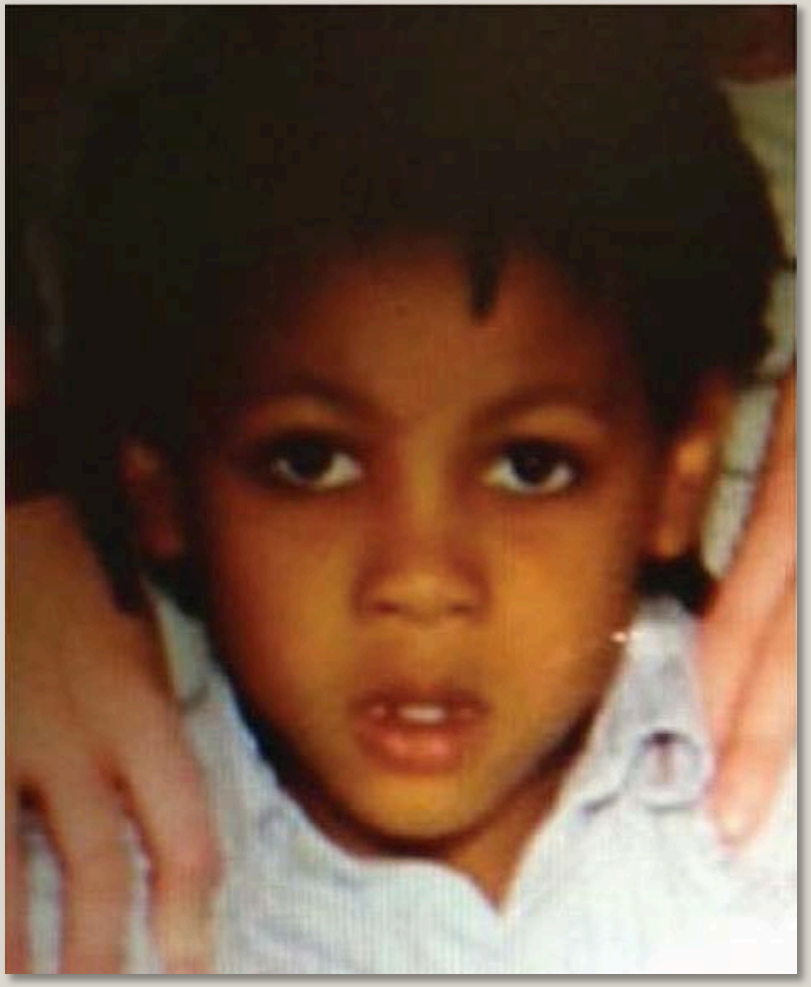
Age 15

children lost since last IACC meeting

Donivan Martin

Age 16

children lost since last IACC meeting



Michael Kingsbury

Age 7

wandering | what we need

NAA Recommendations:

- Resources and advice for families from pediatricians and other professionals
- Access to affordable home safety items and water safety programs
- Insurance coverage and federal funding for tracking technology for at-risk individuals – millions of dollars available for Alzheimer's patients, not Autism
- Access to augmentative communication technology for non-verbal and minimally verbal individuals
- Medical research – obsessive behaviors, fight or flight reactions, sleep disorders
- AMBER Alert
- Education/Toolkits for caregivers to help understand and avoid wandering triggers
- Training for physicians on wandering behaviors and the ICD-9 code
- Resources for schools and specific response protocols
- Training for social workers, school administrators and first responders – Training Summits, Webinar series, etc. – Multiple Agency Involvement - HHS, DOJ, DOE

NATIONAL AUTISM ASSOCIATION

VISIT US ONLINE:
www.NationalAutism.org
www.AWAARE.org

CONTACT US:
e-mail: naa@nationalautism.org
phone: 877-622-2884

IACC
INTERAGENCY AUTISM
COORDINATING COMMITTEE

Meeting of the IACC

IACC Activities to Address Wandering

AUTISM SCIENCE FOUNDATION

SEARCHING
SHARING
SOLVING

IACC Activities to Address Wandering

Alison Singer
Autism Science Foundation
IACC Public Member

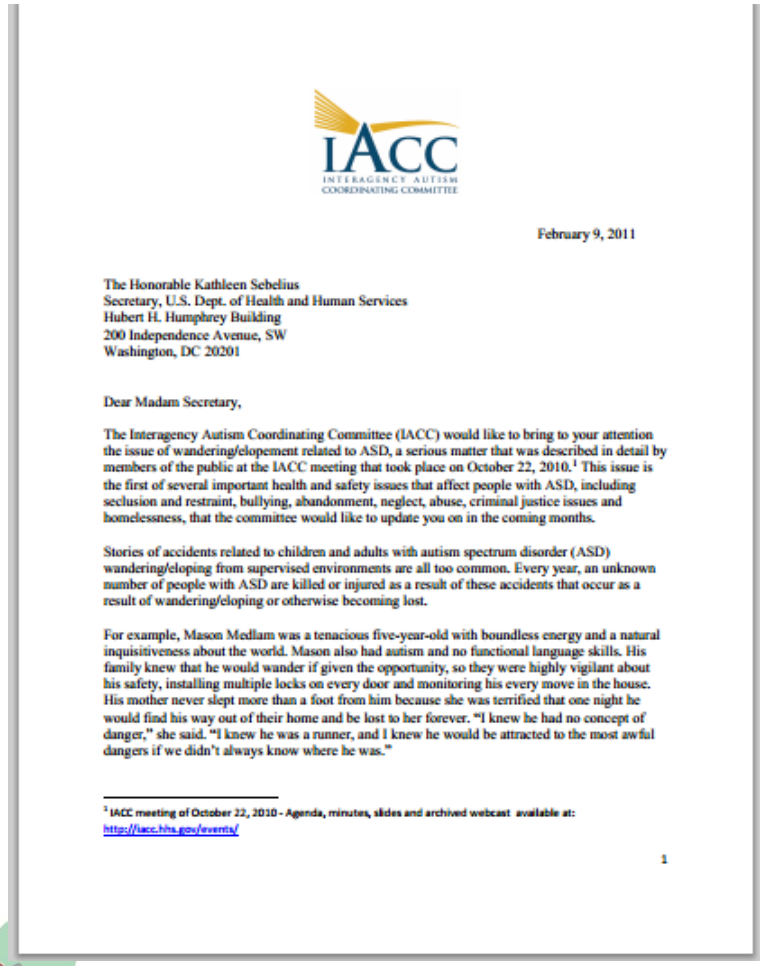
IACC Meeting
July 9, 2013

Timeline

- October 2010:
  - Wandering issue presented at IACC during public comments
  - Safety committee formed to investigate wandering
  - Advisory Letter sent to HHS Secretary Kathleen Sebelius

AUTISM SCIENCE FOUNDATION

Feb-March, 2011



IACC
INTERAGENCY AUTISM COORDINATING COMMITTEE

February 9, 2011

The Honorable Kathleen Sebelius
Secretary, U.S. Dept. of Health and Human Services
Hubert H. Humphrey Building
200 Independence Avenue, SW
Washington, DC 20201

Dear Madam Secretary,

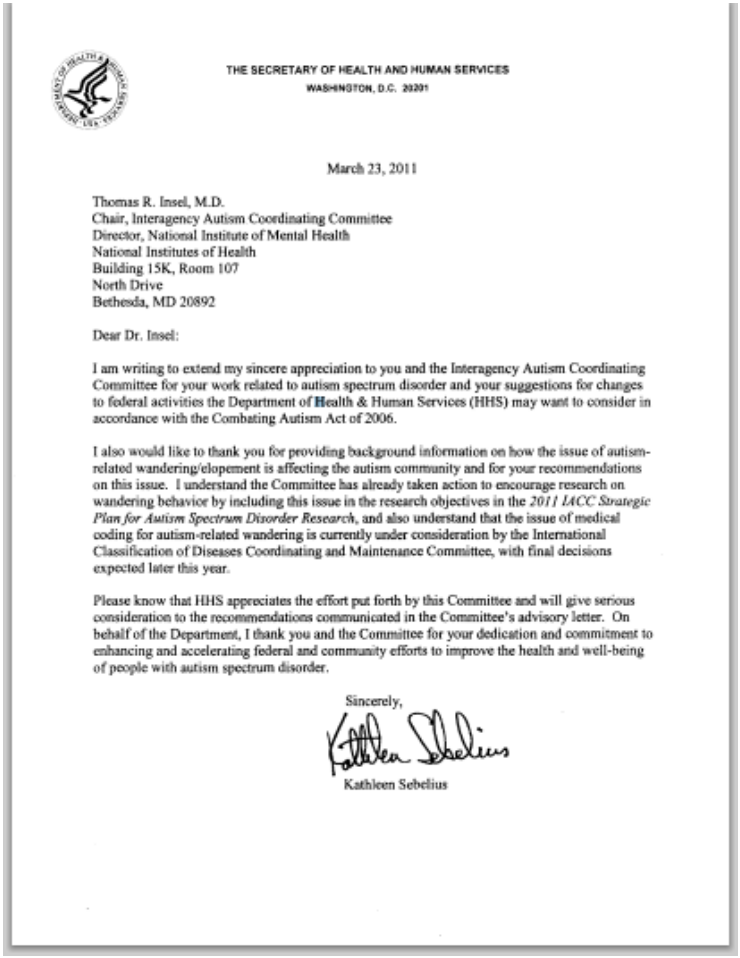
The Interagency Autism Coordinating Committee (IACC) would like to bring to your attention the issue of wandering/elopement related to ASD, a serious matter that was described in detail by members of the public at the IACC meeting that took place on October 22, 2010.[1] This issue is the first of several important health and safety issues that affect people with ASD, including seclusion and restraint, bullying, abandonment, neglect, abuse, criminal justice issues and homelessness, that the committee would like to update you on in the coming months.

Stories of accidents related to children and adults with autism spectrum disorder (ASD) wandering/eloping from supervised environments are all too common. Every year, an unknown number of people with ASD are killed or injured as a result of these accidents that occur as a result of wandering/eloping or otherwise becoming lost.

For example, Mason Medlam was a tenacious five-year-old with boundless energy and a natural inquisitiveness about the world. Mason also had autism and no functional language skills. His family knew that he would wander if given the opportunity, so they were highly vigilant about his safety, installing multiple locks on every door and monitoring his every move in the house. His mother never slept more than a foot from him because she was terrified that one night he would find his way out of their home and be lost to her forever. "I knew he had no concept of danger," she said. "I knew he was a runner, and I knew he would be attracted to the most awful dangers if we didn't always know where he was."

[1] IACC meeting of October 22, 2010 - Agenda, minutes, slides and archived webcast available at: http://iacc.hhs.gov/events/

1



THE SECRETARY OF HEALTH AND HUMAN SERVICES
WASHINGTON, D.C. 20201

March 23, 2011

Thomas R. Insel, M.D.
Chair, Interagency Autism Coordinating Committee
Director, National Institute of Mental Health
National Institutes of Health
Building 15K, Room 107
North Drive
Bethesda, MD 20892

Dear Dr. Insel:

I am writing to extend my sincere appreciation to you and the Interagency Autism Coordinating Committee for your work related to autism spectrum disorder and your suggestions for changes to federal activities the Department of Health & Human Services (HHS) may want to consider in accordance with the Combating Autism Act of 2006.

I also would like to thank you for providing background information on how the issue of autism-related wandering/elopement is affecting the autism community and for your recommendations on this issue. I understand the Committee has already taken action to encourage research on wandering behavior by including this issue in the research objectives in the *2011 IACC Strategic Plan for Autism Spectrum Disorder Research*, and also understand that the issue of medical coding for autism-related wandering is currently under consideration by the International Classification of Diseases Coordinating and Maintenance Committee, with final decisions expected later this year.

Please know that HHS appreciates the effort put forth by this Committee and will give serious consideration to the recommendations communicated in the Committee's advisory letter. On behalf of the Department, I thank you and the Committee for your dedication and commitment to enhancing and accelerating federal and community efforts to improve the health and well-being of people with autism spectrum disorder.

Sincerely,

Kathleen Sebelius

Kathleen Sebelius

AUTISM SCIENCE FOUNDATION

Timeline

- October 2010:
  - Wandering issue presented at IACC during public comments
  - Safety committee formed to investigate wandering
  - Advisory Letter sent to HHS Secretary Kathleen Sebelius

- November 2010:
  - Consortium Formed to Study Wandering
    - Jan-Feb 2011: Survey designed
    - March 2011: Survey released to community
      - (Parents of 1218 kids with ASD, 1076 sibs)

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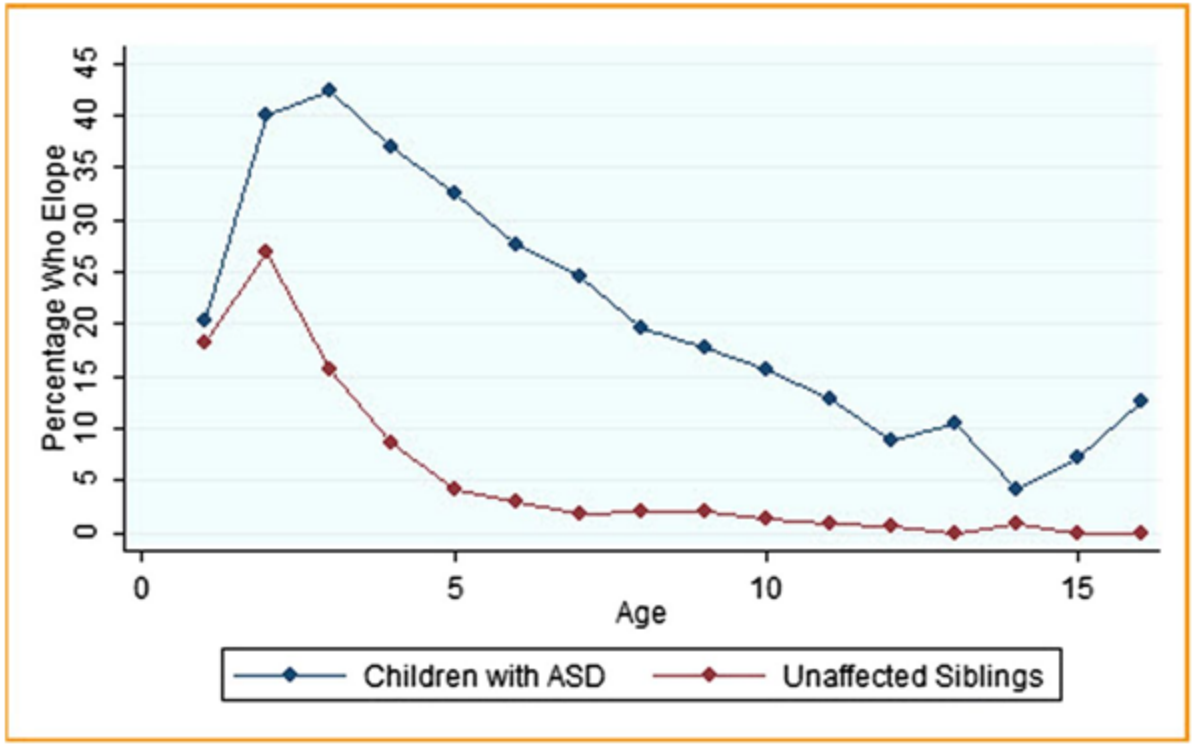
Initial Data Presented April, 2011

Reported rates of elopement at specific ages: a comparison of children with ASD and unaffected siblings.



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Anderson, Law, et al (KKI/IAN)

October, 2011

CDC Home

Centers for Disease Control and Prevention

CDC 24/7: Saving Lives. Protecting People.™

A-Z Index A B C D E F G H I J K L M N O P Q R S T U V W X Y Z #

Classification of Diseases, Functioning, and Disability

ICD and ICF Home

- ▶ICD-9
- ICD-10
- ICD-9-CM
- ICD-10-CM
- ICF
- Classification of Death and Injury Resulting from Terrorism
- North American Collaborating Center

Related Sites

- Centers for Medicare and Medicaid Services
- World Health Organization

NCHS Home > ICD and ICF Home

Recommend 15 Tweet Share

International Classification of Diseases, Ninth Revision (ICD-9)

The International Classification of Diseases (ICD) is designed to promote international comparability in the collection, processing, classification, and presentation of mortality statistics.

This includes providing a format for reporting causes of death on the death certificate. The reported conditions are then translated into medical codes through use of the classification structure and the selection and modification rules contained in the applicable revision of the ICD, published by the World Health Organization. These coding rules improve the usefulness of mortality statistics by giving preference to certain categories, by consolidating conditions, and by systematically selecting a single cause of death from a reported sequence of conditions. The single selected cause for tabulation is called the underlying cause of death, and the other reported causes are the nonunderlying causes of death. The combination of underlying and nonunderlying causes is the multiple causes of death.

The ICD has been revised periodically to incorporate changes in the medical field. To date, there have been 10 revisions of the ICD. The years for which causes of death in the United States have been classified by each revision are as follows:

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May, 2012

AUTISM SCIENCE FOUNDATION

October, 2012

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OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

Occurrence and Family Impact of Elopement in Children With Autism Spectrum Disorders

AUTHORS: Connie Anderson, PhD,[a] J. Kiely Law, MD,[a,b] Amy Daniels, PhD,[a,c] Catherine Rice, PhD,[d] David S. Mandell, ScD,[e] Louis Hagopian, PhD,[a,b] and Paul A. Law, MD, MPH[a,b]

[a]Kennedy Krieger Institute, Baltimore, Maryland; [b]Johns Hopkins University School of Medicine, Baltimore, Maryland; [c]Autism Speaks, New York, New York; [d]National Center on Birth Defects and Developmental Disabilities, Centers for Disease Control and Prevention, Atlanta, Georgia; and [e]University of Pennsylvania Perelman School of Medicine, Center for Mental Health Policy and Services Research, Philadelphia, Pennsylvania.

KEY WORDS
autism spectrum disorders, elopement, wandering

WHAT'S KNOWN ON THIS SUBJECT: Anecdotal accounts suggest elopement behavior occurs in children with autism spectrum disorders (ASDs), that injuries and fatalities can result, and that associated family burden and stress are substantial. However, there has been little research characterizing the phenomenon or its frequency.

WHAT THIS STUDY ADDS: Nearly half of children with an ASD elope, and more than half of these "go missing." Elopement is associated with autism severity, and is often goal-directed. Addressing elopement behavior is an important aspect of

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USA TODAY

SPORTS | LIFE | MONEY | TECH | TRAVEL | OPINION | 77°

This story is part of ALTH AND WELLNESS

Vision-related diseases are a hefty financial burden

Doctors more concerned about kids' repeat concussions

Vitamin D levels in USA peak in August, study finds

Nearly half of children with autism wander from safety

12:12 a.m. EDT October 8, 2012

(Photo: Ron Chapple, jupiterimages)

STORY HIGHLIGHTS

The fear that overtakes a parent when a child wanders away from home or other safe place is easily compounded when that child has an autism-spectrum disorder. A new study shows that such behavior occurs more often than in other kids, and that the hazards can be significant.

In a sample of 1,200 children with autism, 49% had wandered, bolted or "eloped" at least once after age 4; 26% went missing long enough to cause their family concern. By comparison, only 13% of 1,076 siblings without autism had ever wandered off at or after age 4, developmentally the age when such behavior becomes less common, finds the study

Study Shows Children With Autism Tend to Stray

By RONI CARYN RABIN

When Patrick Murphy was 6, he became obsessed with vacuum cleaners. The boy, who has autism, used to slip out of his house near Buffalo without telling his parents, running to a nearby appliance store or into strangers' homes to marvel at vacuum cleaners.

Patrick is now 14, and his parents have double bolts on the doors in their home and brackets on their windows. Still, Patrick — who is now focused on dogs — manages to sneak out. Two weeks ago, he crept from the house after his mother went to bed. When his father came home, he alerted the police. They found Patrick running barefoot in his pajamas at 2 a.m., three miles from his home.

"That was very scary," said Patrick's father, Brian Murphy, who has now added an alarm system to the house to keep his son safe. "He has broken through brackets, windows, picked locks, you name it. It's absolutely the most stressful part of parenting a child with autism."

The behavior, called wandering or elopement, has led to numerous deaths in autistic children by drowning and in traffic accidents. Now a new study of more than 1,200 families with autistic children suggests wandering is alarmingly common. Nearly half of parents with an autistic child age 4 or older said their children had tried to leave a safe place at least once, the study reported. One in four said their children had disappeared long enough to cause concern. Many parents said their wandering children had narrowly escaped traffic accidents or had been in danger of drowning.

Those at greatest risk of wandering off were autistic children with severe intellectual deficits and those who do not respond to their names. The research was published on Monday in the journal Pediatrics.

"I knew this was a problem, but I didn't know just how significant a problem it was until I really began to look into it," said Dr. Paul A. Law, senior author of the study and director of the Interactive Autism Network, a registry that is a project of the Kennedy Krieger Institute in Baltimore. "This is probably one of the leading causes of death and morbidity for kids with autism."

A behavior that has led to numerous accidental deaths.

Advocates for families affected by autism say the findings underscore the need to raise public awareness and alter policy. While Amber alerts are used to mobilize the public when a child is believed to have been abducted, for instance, generally they are not used when a disabled child goes missing, said Alison Singer, president and a founder of the Autism Science Foundation, one of the organizations that supported the study.

Emergency responders should receive special training on how to search for autistic children who are nonverbal and often scared by lights and sirens, she said. Emergency personnel also need to know to check streams or ponds, since many children with autism are drawn to bodies of water, as well as highways.

One in 88 children in the United States received a diagnosis of autism, Asperger syndrome or a related disorder in 2008, according to the Centers for Disease Control and Prevention. While some of these children are socially awkward but high functioning, others have limited intellectual and cognitive abilities.

"For children who are prone to wander, this is a pervasive problem that affects all aspects of families' lives," Dr. Law said. "Many parents just don't go out in public with their child because they don't feel safe with them, or they don't get any sleep at night because the child once escaped through the upstairs window."

The idea for the new study came from a family coping with autism, and it was financed by several advocacy organizations. Researchers surveyed families who had a child with autism or a related disorder between the ages of 4 and 17.

Most of the respondents came from 1,098 of Interactive Autism Network's most active participants, 60 percent of whom completed the survey. Families who chose to participate knew the survey was about wandering, and those coping with wandering children may have been more likely to respond, skewing the results, Dr. Law acknowledged.

Over all, 49 percent of families who participated said a child with autism had tried to wander from home, school or another safe place at least once after age 4; the peak age for wandering was 5. Some parents said their child wandered off several times a week or even several times a day.

"This is the first study to quantify the scope of the problem, and it was much larger than we thought," Ms. Singer said.

BRENDAN BANNON FOR THE NEW YORK TIMES

Patrick Murphy, 14, will sometimes sneak out of the house to pursue his latest interest.

U.S.News & WORLD REPORT

Nearly Half of Children With Autism Wander From Safety: Survey

Advocates say a system such as Amber Alerts is needed for these kids

October 8, 2012 | RSS Feed | Print

HealthDay

By Maureen Salamon
HealthDay Reporter

MONDAY, Oct. 8 (HealthDay News) -- Nearly half of children with autism wander or "elope" from safety -- often to pursue a special interest or goal -- with more than half of those kids disappearing long enough to cause great concern about their well-being, new research suggests.

Researchers from the Interactive Autism Network, a project of the Kennedy Krieger Institute in Baltimore, found that close calls with traffic injuries were reported for 65 percent of the missing children and near-misses with drowning were reported in nearly a quarter of all cases.

Wandering More Common in Autistic Children Than Once Thought

Twelve-year-old Connor McIlwain is one of many children with autism who have repeatedly wandered away from home. (Courtesy Lori McIlwain)

By LARA SALAHI (@BostonLara)
October 5, 2012

Lori McIlwain, 39 of Cary, N.C., lives in constant fear that her 12-year-old son, Connor, who is autistic, will bolt from home or school if he is ever left unsupervised.

"You live in constant prevention mode," said McIlwain. "You're always on high alert."

Four years ago, Connor wandered away from a school playground and headed right toward a busy highway.

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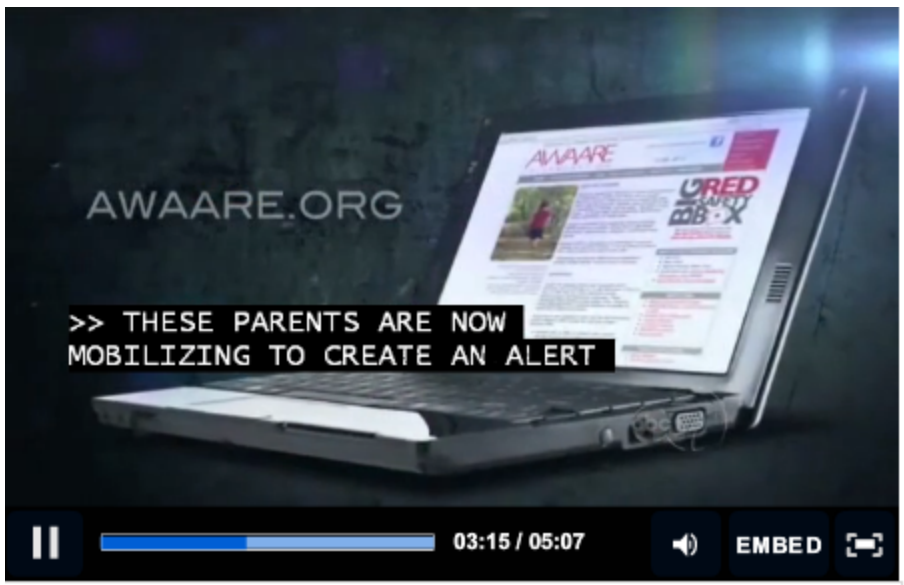
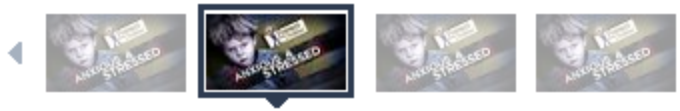


Related Video

ALL LIVE VIDEO : ALL VIDEO »



Protect Our Children: Segment 2

TAGS: seasonal

Comment Now Email Print Report a typo

NEW YORK -- On Saturday, April 6th, WABC-TV aired a special entitled, "Protect Our Children: Anxious & Stressed" at 7 PM, EDT. (Also to be re-run Sun. 4/7 at 5:30am).

The program is hosted by Eyewitness News Anchor, Diana Williams, and reports on the mental health of our children, an issue that has come into greater focus since the tragedy of Newtown, Connecticut. Our children are exposed to more

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2013

Autism

Wandering Off (Elopement)

What is wandering off *(elopement)*?

This is the tendency for an individual to try to leave the safety of a responsible person's care or a safe area, which can result in potential harm or injury. This might include running off from adults at school or in the community, leaving the classroom without permission, or leaving the house when the family is not looking. This behavior is considered common and short-lived in toddlers, but it may persist in children and adults with autism spectrum disorders (ASDs). Children with ASDs have challenges with social and communication skills and safety awareness. This makes wandering a potentially dangerous behavior.

Why do children with ASDs wander off?

Parents of children with ASDs report the following top 5 reasons for wandering:

- Simple enjoyment of running or exploring
- Desire to reach a place he enjoys (such as the park)
- Trying to escape an anxious situation (like demands at school)
- Pursuit of a special interest (as when a child fascinated by trains heads for train tracks)
- Trying to escape uncomfortable sensory stimuli (like loud

Adapted from AWAARE *Autism & Wandering,* available at http://awaare.org/docs/wanderingbrochure.pdf, and IAN Research Report: Elopement and Wandering, reprinted with permission of Kennedy Krieger Institute, Baltimore, Maryland. This information appeared originally at: www.iancommunity.org/cs/ian_research_reports/ian_research_report_elopement.

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™

Today: “Autism Alert”

Explore and research the need for and utility of an alert system similar to the AMBER alert or Silver alert, but tailored to the specific needs and characteristics of children under age 18 with ASD who wander or elope to help families and communities rapidly locate children with autism who have wandered or eloped.

IACC Letter to Sec. Sebelius, Feb 2011

AUTISM SCIENCE FOUNDATION

Meeting of the IACC

Afternoon Agenda – Continued

2:30-3:30 Panel on Wandering - continued

2:50-3:10 The Amber Alert Program
Jeff Slowikowski
Associate Administrator
Office of Juvenile Justice and Delinquency Prevention
U.S. Department of Justice

3:10-3:30 Committee and Panel Discussion

3:30-3:40 Early Education Tips for Child Care Providers
Shantel Meek, M.S.
Policy Advisor for Early Childhood Development
Administration for Children and Families

IACC
INTERAGENCY AUTISM
COORDINATING COMMITTEE

Meeting of the IACC

The Amber Alert Program

Missing Children With Special Needs

Robert Lowery, Jr.
Senior Executive Director
Missing Children Division

July 9, 2013

Autism

- We experience many cases of children with special needs who are reported missing to law enforcement
- The highest number of the cases appear to involve children with Autism Spectrum Disorder
- Others cases involve children with Down Syndrome, traumatic brain injury and any other conditions characterized by physical, social or cognitive impairments and communications challenges

Missing Special Needs Children

Unique challenges –

- the children have a tendency to “wander or elope”
- the children sometimes have a tendency to seek small enclosed spaces which may be overlooked during initial searches
- some of them may elude or hide from searchers
- some children have a diminished sense of fear

Challenges continued….

- They may be unable to respond to search teams
- The children can be very resilient
- Unique behaviors – *“no two children are alike”*
- The children may have very specific interests – active roadways, road signs, trains, fire trucks.
- The children often seek bodies of water

Challenges

- Some children may walk long distances – far exceeding search perimeters established by law enforcement and search teams.
- Search teams must consider innovative and creative techniques to find the children

Food	Trail Lighting
Music	Favorite Toy
Parent voice	Fire Apparatus
Helicopter	Train

Leading Causes of Death

Missing children with autism are especially "at risk" because of unusually high mortality rates

Drowning – 91%*

Struck by vehicles

Exposure to the elements

Other accidental causes

**National Autism Association*

Association

NCMEC Strategies

- On March 1st, 2012 NCMEC staff met with SME's to discuss the issues and identify strategies
- Representatives from National Autism Association, nationally recognized search experts, Team Adam Consultants and staff from MCD, National Safety Director, Call Center, Family Advocacy, Outreach and Training

Lost/Missing Children Strategies

- Reports of lost/missing special needs children (regardless of affliction) require elevated response – *must be treated critically!*
- Actions of the first responders are vital to the safe recovery of the child
- Immediate response to bodies of water in the vicinity to "*head the child off.*"
- Attempt to contain the child in a specific area.

Strategies continued….

LISTEN INTENTLY TO THE PARENTS/ CARE GIVERS –

- Get information about the behaviors of the child. Assessment of the “risk factors.”
- Find out what interests the child? – i.e. favorite places they like to go, interests in trains, heavy equipment, water, roadways
- Has the child gone missing before?

Knowing the Child Continued……

- How will the child likely react to searchers?
- Will they hide? Will they run? Are they verbal or nonverbal? Will they respond to their name being called?
- How will they react to K-9's, ATV's, etc.
- Who will they most likely respond?
- Do they need life-sustaining medications?

Response/Search Strategies continued…

- Sustained searches –
- Development of search plan
- Incident Command System (ICS)
  - Must be aggressive and well coordinated
  - All available emergency personnel – law enforcement, fire, medical
  - Other jurisdictions for additional help
  - Trained searchers/use of volunteers

Lessons Learned

DO NOT GIVE UP UNTIL THE CHILD IS FOUND!

The case of 8 year old R.W. of Hanover, Virginia demonstrates that these children are especially resilient and can survive many days – even in rugged terrain and inclement weather

Available Resources

Team Adam

Team Adam will deploy on cases of missing special needs children

Specialized Team Adam search personnel will also deploy to assist, when appropriate

2011 – 8 deployments, 2 recalls – children found

2012 – 12 deployments, 6 recalls – children found

2013 – 6 deployments, 1 recall – child found

Best Practices Guide – Search Protocols

- NCMEC Publication of Search Best Practices – Search Protocols –
- "*Law Enforcement Response Guide for Missing and Abducted Children*"
- Awareness and Education – First responders
- Role of Call Takers – 911 Centers – NCMEC
- Focus on prevention – parents, care givers, educators, etc.
- Parents/Caregiver considerations?

Continued….

Use of Electronic Tracking Devices – Project Lifesaver, LoJackSafetyNet.com, Caretrak, Emfinders.com

Awareness and First Responder Training

- NCMEC Staff have developed training package and delivered to first responders via webinars and classroom to over 1,000
- Law Enforcement Outreach Teams (Team Adam and Project ALERT) provided train-the-trainer instruction and training packages. 48 trainings have already been delivered in 15 States.
- Published articles in professional law enforcement magazines – newsletters

Awareness and First Responder Training

- All State Missing Child Clearinghouses
- International Association of Fire Chiefs (IAFC) have been engaged re; training and publication
- The “National Search and Rescue Committee” are including the NCMEC protocols in their response manual (participating agencies – DOD, DHS, DOI, DOC, DOT, FCC, NASA)

A Child is Missing – Targeted Notification

- **Neighborhood canvassing and rapidly alerting vital**
- **Automated telephone notification system notifying residents/businesses in a targeted area about a missing child**

NATIONAL CENTER FOR MISSING & EXPLOITED CHILDREN®

AMBER® ALERT

Girl, 9, on bike seized by man

East Arlington witness alerted by screams

By Robert Tharp
Fort Worth Star-Telegram

ARLINGTON — A 9-year-old Arlington girl was kidnapped yesterday afternoon as she and her younger brother rode bicycles in the parking lot of a vacant shopping center in east Arlington, police said.

Amber Hagerman

A witness told police he looked up after hearing Amber Hagerman scream and saw a man grab her from her bicycle and push her inside a black, full-sized pickup. The man then jumped in the truck and sped out of

(More on ABDUCTION on Page 16)

Saturday

The Case of Amber Hagerman

January 13, 1996

3:15 pm

Child's body found in Arlington

6-month-old Amber looks at a photo album.

Amber is shown dressed for Halloween at age 2.

Amber, 6, smiles in her school picture.

Portrait of a fun-loving 9-year-old

By Mary Doclar
Fort Worth Star-Telegram

ARLINGTON — Amber Hagerman owns 26 Barbies, loves Taco Bell and vanilla ice cream and is a whiz on roller skates.

Her father describes the blue-eyed third-grader with long brown hair as "wildfire with a good sense of humor."

And her mother tenderly remembers the time that Amber put makeup on a pink stuffed rabbit.

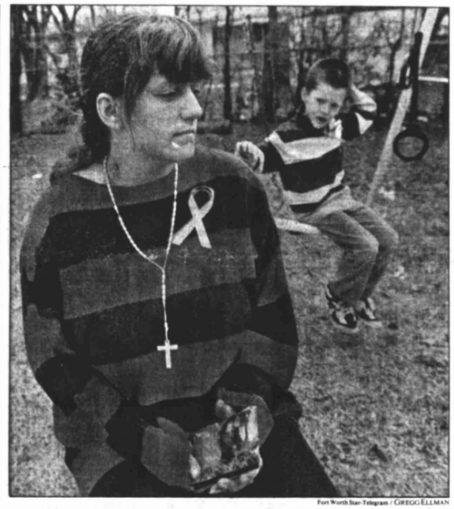
"She decided she needed lipstick — all over his face," said Donna Whitson, 28, smiling down yesterday at a snapshot of Amber and the bunny. "She loves makeup."

The nation has gotten to know Amber only as the little girl who was snatched up by a man in a black pickup while riding her bike one day.

But what is lost in the TV images and news accounts of the crime is the story of a child who likes to float on innertubes at Joe Pool Lake, enjoys a good game of Nintendo and plays on a trampoline with her best friend.

Richard Hagerman, Amber's father, said he knew his daughter was something special when she tried to turn herself over right after

(More on AMBER on Page 15)



Fort Worth Star-Telegram / Gregg Ellman

Donna Whitson, mother of Amber Hagerman, waits for news of her abducted daughter with her son, Richard Chad Hagerman, in her parents' back yard in east Arlington.

Remains resemble Amber

By Robert Tharp and Deanna Boyd
Fort Worth Star-Telegram

ARLINGTON — The body of a small child with long dark hair was discovered in a creek bed near Texas 360 and Northeast Green Oaks Boulevard in far north Arlington late last night.

Amber Hagerman

Authorities said the body matched the description of Amber Hagerman, 9, who has been missing since Saturday.

Jerry Wurst, 33, a resident of Forest Ridge Apartments, said he was standing on his second-floor balcony looking out when he heard someone yell.

Wurst said he yelled, "What's going on?" And the person replied, "There's a body in the creek."

Wurst said he then called 911. Officers said the body was naked. The body lay in a natural creek channel behind the apartment complex.

Wurst said he took a flashlight and went to the creek after he called 911. "I saw black hair," he said. "The body was real white."

The body was found at 11:41

(More on ABDUCTION on Page 15)

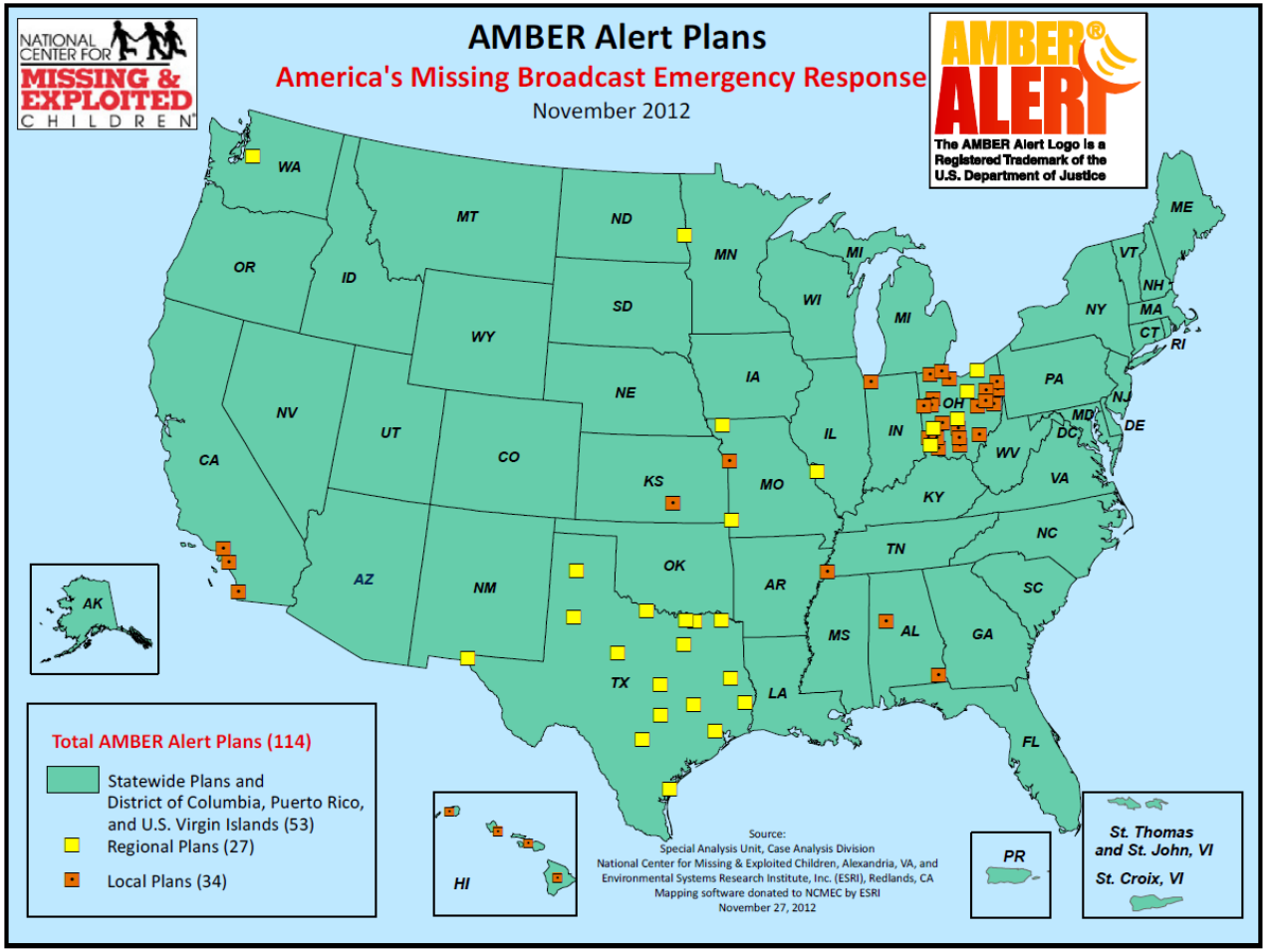
Time is the enemy

- AMBER Alert was developed after a child was abducted and quickly taken from the area in a vehicle. She was ultimately murdered.
- It is a voluntary partnership based on this case and a study conducted on abducted children who were murdered. 76% were murdered in the first 3 hours

Department of Justice Recommended Criteria for an Amber ALERT

- There is reasonable belief by law enforcement that a child abduction has occurred.
- The law enforcement agency believes that the child is in imminent danger of serious bodily injury or death.
- There is sufficient descriptive information about the victim and the abductor for law enforcement to issue an AMBER Alert to assist in the recovery of the child.
- The abduction is of a child aged 17 years or younger.
- Amber ALERT is managed at the State and regional level

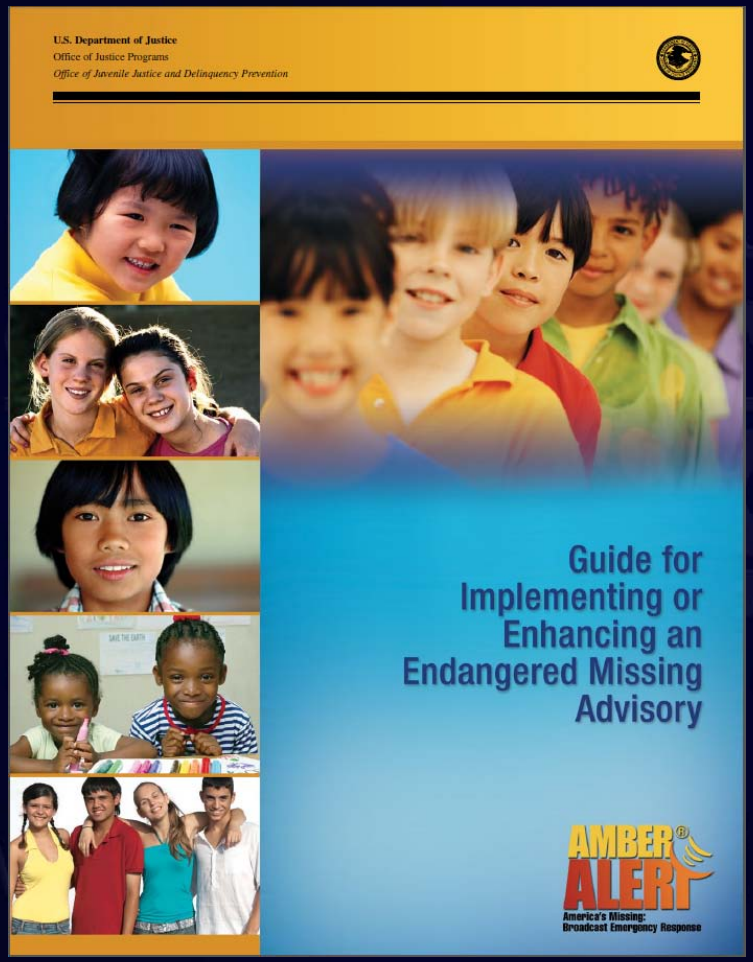
Local, Regional and State Plans



AMBER is not useful every time

- AMBER Alert is most effective when vehicle information is known.
- DOT and commercial highway digital signs, airports, hotels, business property

Law Enforcement Tools



- AMBER Alert has taught us that rapidly engaging the public is critical
- However, oversaturation erodes that assistance and support
- Matching the proper notification tool with the support needed is critical


Questions?
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MISSING & EXPLOITED CHILDREN®
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IACC
INTERAGENCY AUTISM
COORDINATING COMMITTEE

Meeting of the IACC

Tips for Early Care and Education Providers

Tips for Early Care and Education Providers

Interagency Autism Coordinating Committee Meeting
July 9th, 2013

ADMINISTRATION FOR CHILDREN & FAMILIES

ADMINISTRATION FOR CHILDREN & FAMILIES

Administration for Children and Families Early Childhood Development

Head Start

Child Care

Early Childhood State Advisory Councils

Tribal Maternal Infant Early Childhood Home Visiting

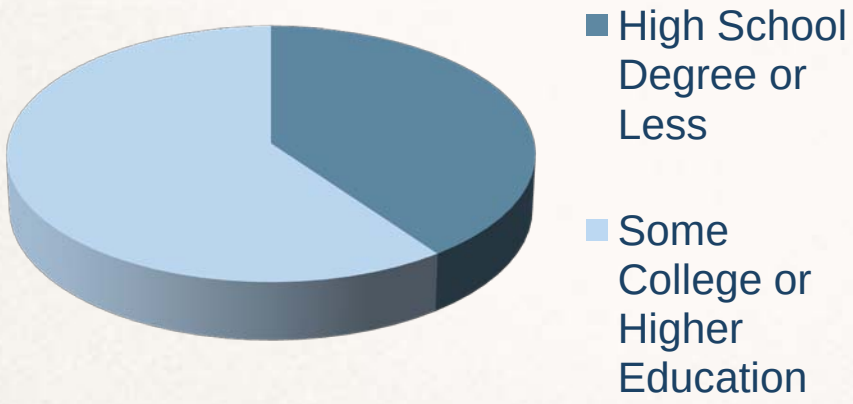
Race to the Top-Early Learning Challenge

Children in Early Care and Education Settings

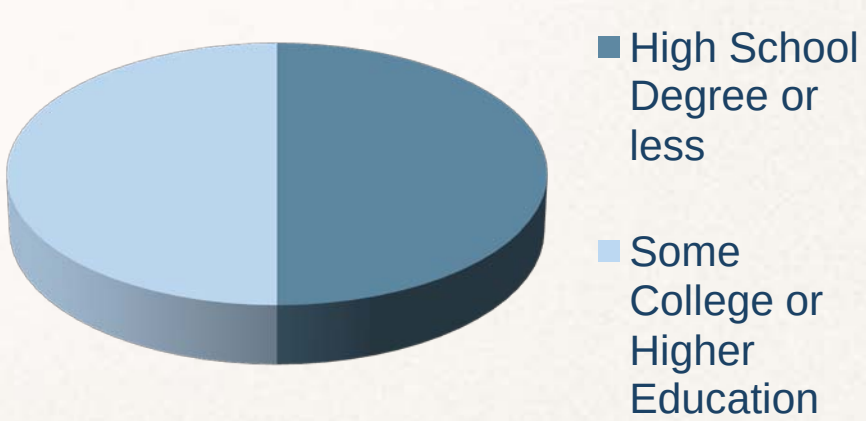
- Nearly 11 million children under age 5 are in some type of child care setting every week – on average for 35 hours per week
- Nearly 1.7 million children receive child care assistance from the Child Care and Development Fund every month
- The Head Start program serves nearly 1 million children

Early Childhood Workforce: Education Level

Center-Based Early Childhood Providers



Home-Based Early Childhood Providers



•Bassok, D., Fitzpatrick, M., Loeb, S., & Paglayan, A. (2013). The early childhood care and education workforce from 1990 through 2012: Changing dynamics and persistent concerns. *Education Finance and Policy.*

Early Childhood Workforce: Education Level
Head Start

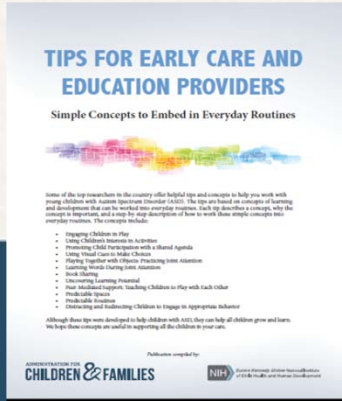
- Due to statutory requirements, Head Start has a larger percentage of teachers with at least a B.A. in early childhood programs.
- 64% of Head Start teachers hold at least a B.A.
- 60% of Early Head Start teachers hold at least a 2-year degree.

Tips for Early Childhood Providers

- ACF and NICHD queried a group of researchers:

"*If you could give early childhood providers nationwide one tip for working with children with ASD, what would it be?*"

….Keeping in mind varied education and literacy levels, no supplemental support, low wages, resource-poor classrooms and homes.



Tips for Early Childhood Providers

- 54% response rate from researchers
- Modified language for reading levels
- Added tangible examples
- Circulated to Federal experts
- Returned to researchers for final review
- Disseminated to early childhood networks

Tips

1. Engaging Children in Play
2. Using Children's Interests in Activities
3. Promoting Child Participation with a Shared Agenda
4. Using Visual Cues to Make Choices
5. Playing Together with Objects: Practicing Joint Attention
6. Learning Words During Joint Attention
7. Book Sharing

Tips

8. Uncovering Learning Potential
9. Peer-Mediated Support: Teaching Children to Play with Each Other
10. Predictable Spaces
11. Predictable Routines
12. Distracting and Redirecting Children to Engage in Appropriate Behavior

Engaging Children in Play: WHAT

Social play with objects involves playing with toys in a way that encourages talking, looking, or engagement between a child and a caretaker and/or a peer. The child engages with the adult or peer and with the object, usually taking turns that build on or keep the activity going. This type of play is usually marked by shared enjoyment between partners and includes smiles, laughs, and continued interest.

Connie Kasari, Professor, Graduate School of Education and Information Sciences, UCLA

Engaging Children in Play: WHY

Social object play is an important developmental skill that increases social engagement and communication between partners.

Engaging Children in Play: HOW

Step 1: Provide developmentally appropriate toys at the child's current play level.

Step 2: Follow what the child is looking at to see what interests them.

Step 3: Once the child begins to play with the toy, join in the play by imitating what the child is doing.

Step 4: Build the play activity by taking a turn with the child and following what the child does. Balance the turns so that neither partner is taking more turns than the other.

Engaging Children in Play: HOW

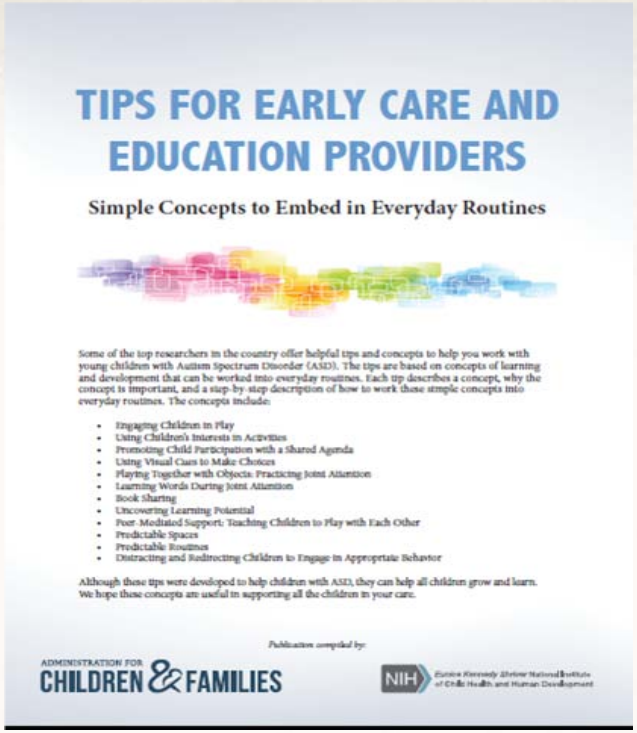
- **Step 5:** Once the play routine is solid, expand the routine. Bring in other toys or items to extend the activity. Here's an example:
  - If the child is building a tall tower with blocks and you are helping to build the tower by taking your turn, encourage the child to knock the blocks down when all the blocks are used. The crashing of the blocks should be fun and motivate the child to repeat the activity (rebuild the tower and crash again).
  - Expand the activity by adding a toy figure to the tower that falls down, or add a truck to the game that knocks the blocks down.

Engaging Children in Play: HOW

Step 6: Look to the child's attention, active involvement, and enjoyment of the activity to see if the play routine is motivating. The more motivated the child is, the longer the play routine will last and the greater the opportunities for practicing social and communication skills.

Next Steps

- Add corresponding videos
- Create “hybrid” version for further simplification
  - Decrease number of words
  - Add step-by-step pictures
- Research:
  - Minimal education, training, knowledge necessary to support children with ASD in inclusive early childhood settings
  - Effective strategies that can easily be embedded in existing early childhood activities with fidelity
  - Assuring systems are linked
    - The early intervention, medical home, mental and behavioral health systems should assure linkage to the early care and education system.



TIPS FOR EARLY CARE AND EDUCATION PROVIDERS

Simple Concepts to Embed in Everyday Routines

Some of the top researchers in the country offer helpful tips and concepts to help you work with young children with Autism Spectrum Disorder (ASD). The tips are based on concepts of learning and development that can be worked into everyday routines. Each tip describes a concept, why the concept is important, and a step-by-step description of how to work these simple concepts into everyday routines. The concepts include:

- Engaging Children in Play
- Using Children's Interests in Activities
- Promoting Child Participation with a Shared Agenda
- Using Visual Cues to Make Choices
- Playing Together with Objects: Practicing Joint Attention
- Learning Words During Joint Attention
- Book Sharing
- Uncovering Learning Potential
- Peer-Mediated Support: Teaching Children to Play with Each Other
- Predictable Spaces
- Predictable Routines
- Distracting and Redirecting Children to Engage in Appropriate Behavior

Although these tips were developed to help children with ASD, they can help all children grow and learn. We hope these concepts are useful in supporting all the children in your care.

Publication compiled by:

ADMINISTRATION FOR CHILDREN & FAMILIES

NIH

www.acf.hhs.gov/programs/ecd

www.acf.hhs.gov/ecd/asd

Shantel.Meek@acf.hhs.gov

Meeting of the IACC

Afternoon Agenda – Continued

3:40 Science Update

Thomas Insel, M.D.
Director
National Institute of Mental Health (NIMH) and
Chair, IACC

4:00 IACC Business

Thomas Insel, M.D.
Director
National Institute of Mental Health (NIMH) and
Chair, IACC

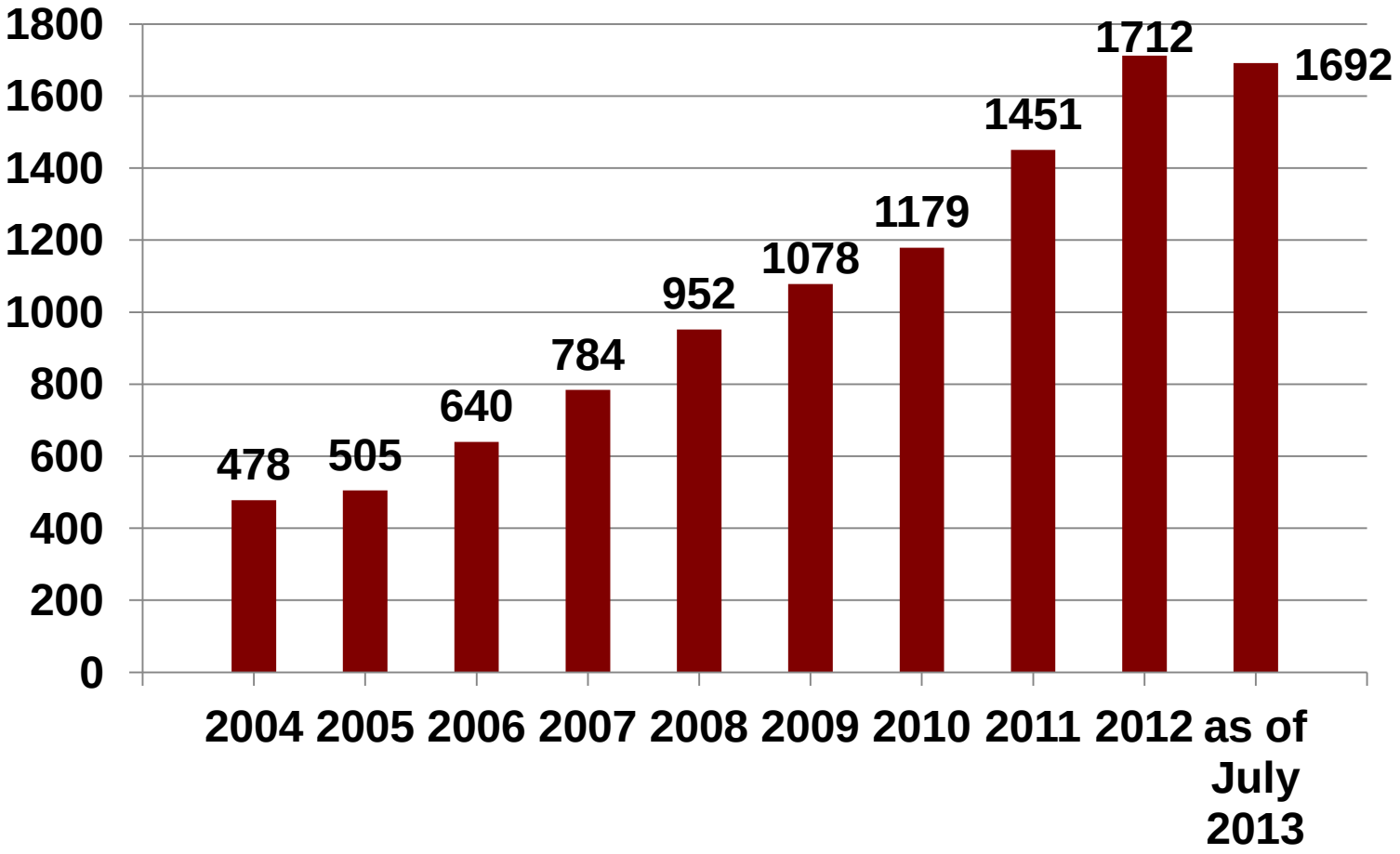
Susan Daniels, Ph.D.
Acting Director, OARC and Executive Secretary,
IACC

Meeting of the IACC

Science Update

Thomas R. Insel, M.D.
Director, National Institute of Mental Health and Chair, IACC
IACC Full Committee Meeting – July 9, 2013

Publications Jan 1 – June 30



Articles listed as “autism” in PubMed for first 6 months of each year

Q1. When should I be concerned?

Biological Psychiatry
A Journal of Psychiatric Neuroscience and Therapeutics

May 23, 2013

Compared to What? Early Brain Overgrowth in Autism and the Perils of Population Norms

Raznahan A, Wallace GL, Antezana L, Greenstein D, Lenroot R, Thurm A, Gozzi M, Spence S, Martin A, Swedo SE, Giedd JN

EUROPEAN JOURNAL OF PAEDIATRIC NEUROLOGY

May 24, 2013

Confirmation of chromosomal microarray as a first-tier clinical diagnostic test for individuals with developmental delay, intellectual disability, autism spectrum disorders and dysmorphic features

Battaglia A, Doccini V, Bernardini L, Novelli A, Loddo S, Capalbo A, Filippi T, Carey JC

Journal of Autism and Developmental Disorders

April 26,2013

Children's Compliance with American Academy of Pediatrics' Well-Child Care Visit Guidelines and the Early Detection of Autism

Daniels AM, Mandell DS

Q2. How can I understand what is happening?

nature neuroscience

June 2,2013

Circuit level defects in the developing neocortex of Fragile X mice
Goncalves JT, Anstey JE, Golshani P, Portera-Cailliau C

Neuron

May 8, 2013 & June 5, 2013

Excitatory/Inhibitory Synaptic Imbalance Leads to Hippocampal Hyperexcitability in Mouse Models of Tuberous Sclerosis
Bateup HS, Johnson CA, Denefrio CL, Saulnier JL, Kornacker K, Sabatini BL

Temporal and Mosaic Tsc1 Deletion in the Developing Thalamus Disrupts Thalamocortical Circuitry, Neural Function, and Behavior
Normand EA, Crandall SR, Thorn CA, Murphy EM, Voelcker B, Browning C, Machan JT, Moore CI, Connors BW, Zervas M

Q2. How can I understand what is happening?

BRAIN June 2013

Impaired thalamocortical connectivity in autism spectrum disorder: a study of functional and anatomical connectivity

Aarti Nair, Jeffrey M. Treiber, Dinesh K. Shukla, Patricia Shih, and Ralph-Axel Müller

JAMA Psychiatry June 18,2013

Salience Network–Based Classification and Prediction of Symptom Severity in Children With Autism

Lucina Q. Uddin, PhD; Kaustubh Supekar, PhD; Charles J. Lynch, BA; Amirah Khouzam, MA; Jennifer Phillips, PhD; Carl Feinstein, MD; Srikanth Ryali, PhD; Vinod Menon, PhD

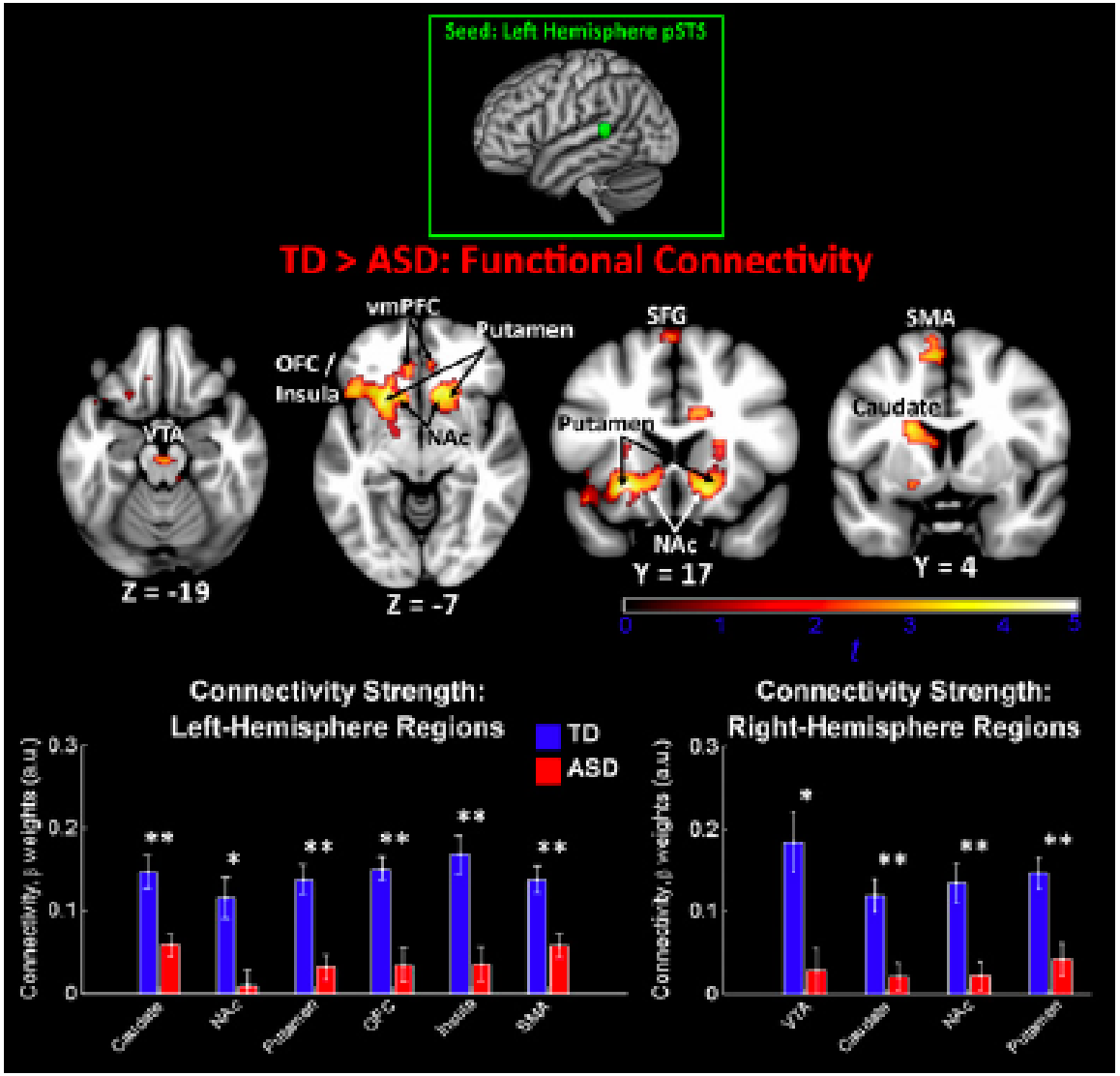
PNAS Proceedings of the National Academy of Sciences of the United States of America June 17, 2013

Underconnectivity between voice-selective cortex and reward circuitry in children with autism

Abrams DA, Lynch CJ, Cheng KM, Phillips J, Supekar K, Ryali S, Uddin LQ, Menon V

Underconnectivity between voice-selective cortex and reward circuitry in children with autism

Abrams DA, Lynch CJ, Cheng KM, Phillips J, Supekar K, Ryali S, Uddin LQ, Menon V



Q2. How can I understand what is happening?

June 18,2013
July 3, 2013

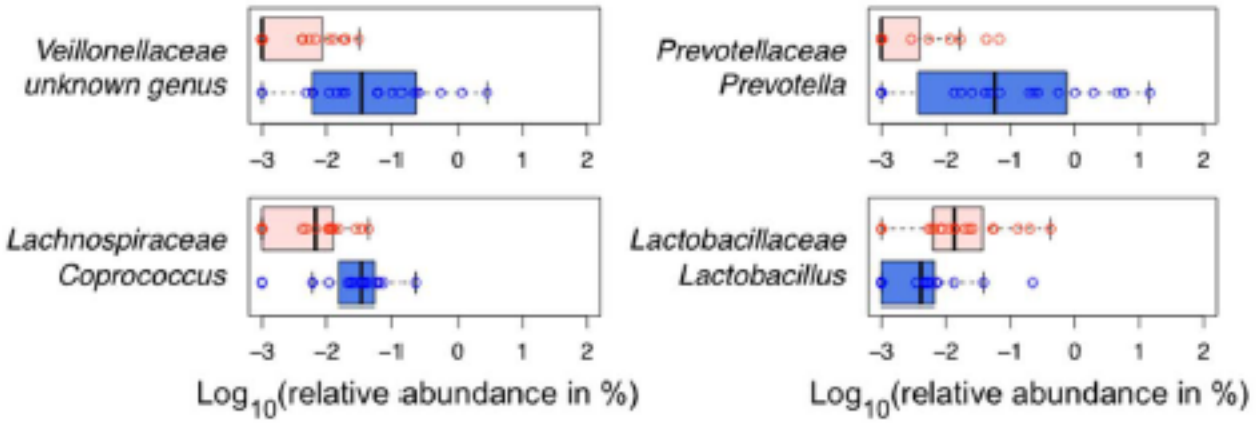
Markers of Celiac Disease and Gluten Sensitivity in Children with Autism

Lau NM, Green PHR, Taylor AK, Hellberg D, Ajamian M, Tan CZ, Kosofsky BE, Higgins JJ, Rajadhyaksha AM, Alaedini A

Reduced Incidence of *Prevotella* and Other Fermenters in Intestinal Microflora of Autistic Children

Dae-Wook Kang[1☯], Jin Gyoon Park[2☯], Zehra Esra Ilhan[1], Garrick Wallstrom[2,3], Joshua LaBaer[2], Ja

B



Q3. What caused this to happen and can it be prevented?

American Journal of
Epidemiology

June 27, 2013

Maternal Dietary Fat Intake in Association With Autism Spectrum Disorders

Lyall K, Munger K, O'Reilly E, Santangelo A, and Ascherio A.

JAMA®
The Journal of the American Medical Association

April 24, 2013

Prenatal Valproate Exposure and Risk of Autism Spectrum Disorders and Childhood Autism

Christensen J, Gronberg TK, Sorensen MJ, Schendel D, Parner ET, Pedersen LH, Vestergaard M

June 18, 2013

ehp ENVIRONMENTAL HEALTH PERSPECTIVES

Perinatal Air Pollutant Exposures and Autism Spectrum Disorder in the Children of Nurses' Health Study II Participants

Roberts A, Lyall K, Hart J, Laden F, Just A, Bobb J, Koenen K, Ascherio A and Weisskopf M

Q3. What caused this to happen and can it be prevented?

Rare Complete Knockouts in Humans: Population Distribution and Significant Role in Autism Spectrum Disorders

Neuron Report

Elaine T. Lim,[1,4,5,6,7] Soumya Raychaudhuri,[4,6,9] Stephan J. Sanders,[10] Christine Stevens,[4] Aniko Sabo,[11] Daniel G. MacArthur,[1,4,6] Benjamin M. Neale,[1,4,5,6] Andrew Kirby,[1,4,6] Douglas M. Ruderfer,[1,3,4,5,6,8,12,14,15] Menachem Fromer,[1,3,4,5,6,8,12,14,15] Monkol Lek,[1,4,6] Li Liu,[18] Jason Flannick,[1,2,4,6] Stephan Ripke,[1,4,5] Uma Nagaswamy,[11] Donna Muzny,[11] Jeffrey G. Reid,[11] Alicia Hawes,[11] Irene Newsham,[11] Yuanqing Wu,[11] Lora Lewis,[11] Huyen Dinh,[11] Shannon Gross,[11] Li-San Wang,[19] Chiao-Feng Lin,[19] Otto Valladares,[19] Stacey B. Gabriel,[4] Mark dePristo,[4] David M. Altshuler,[1,2,4,6] Shaun M. Purcell,[1,3,4,5,6,8,12,14,15] NHLBI Exome Sequencing Project, Matthew W. State,[10] Eric Boerwinkle,[11,21] Joseph D. Buxbaum,[13,14,15,16,17] Edwin H. Cook,[22] Richard A. Gibbs,[11] Gerard D. Schellenberg,[20] James S. Sutcliffe,[23] Bernie Devlin,[24] Kathryn Roeder,[18] and Mark J. Daly[1,4,5,6,*]

Jan, 2013

PLOS | GENETICS

June 9, 2013

Network Topologies and Convergent Aetiologies Arising from Deletions and Duplications Observed in Individuals with Autism

Noh HJ, Ponting CP, Boulding HC, Meader S, Betancur C, Buxbaum JD, Pinto D, Marshall CR, Lionel AC, Scherer SW, Webber C

AJHG American Journal of Human Genetics

July 3, 2013

Intellectual Disability Is Associated with Increased Runs of Homozygosity in Simplex Autism

Gamsiz E, Viscidi E, Frederick A, Nagpal S, Sanders S, Murtha M, Schmidt M, Simons Simplex Collection Genetics Consortium , Triche E, Geschwind D et al.

Q4. Which treatments and interventions will help?

frontiers in
INTEGRATIVE NEUROSCIENCE

June 18, 2013

Accommodating to motor difficulties and communication impairments in people with autism: the MORE intervention model
Emerson A, Dearden J

Behavioral
Neuroscience

May 20, 2013

Environmental Enrichment as an Effective Treatment for Autism: A Randomized Controlled Trial
Woo CC, Leon M

Q5. Where can I turn for services?

PEDIATRICS
OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

June 17, 2013

Racial and Ethnic Differences in Subspecialty Service Use by Children With Autism

Broder-Fingert S, Shui A, Pulcini CD, Kurowski D, Perrin JM

PSYCHIATRIC SERVICES

June 17, 2013

Impact of State Mental Health Parity Laws on Access to Autism Services

Bilaver LA, Jordan N

MATERNAL AND CHILD HEALTH JOURNAL

June 23, 2013

The Relationship Between the Medical Home and Unmet Needs for Children with Autism Spectrum Disorders

Farmer JE, Clark MJ, Mayfield WA, Cheak-Zamora N, Marvin AR, Law JK, Law PA

Q6. What does the future hold, particularly for adults?

Research in Developmental Disabilities

June 18, 2013

Predictors of sustainable work participation of young adults with developmental disorders

Holwerda A, van der Klink JJL, de Boer MR, Groothoff JW, Brouwer S

Journal of Autism and Developmental Disorders

April 26, 2013

Cognitive Enhancement Therapy for Adults with Autism Spectrum Disorder: Results of an 18-month Feasibility Study

Eack SM, Greenwald DP, Hogarty SS, Bahorik AL, Litschge MY, Mazefsky CA, Minshew NJ

Q7. What other infrastructure and surveillance needs must be met?

Molecular Psychiatry

June 18, 2013

The autism brain imaging data exchange: towards a large-scale evaluation of the intrinsic brain architecture in autism

Di Martino A, et.al.

Journal of Autism and Developmental Disorders

April 7, 2013

The International Collaboration for Autism Registry Epidemiology (iCARE): Multinational Registry-Based Investigations of Autism Risk Factors and Trends

Schendel DE et. al.

Meeting of the IACC

Afternoon Agenda – Continued

4:00 IACC Business – Continued

4:00-4:15 **DSM-5 Planning Group Update**
Geraldine Dawson, Ph.D.
Professor of Psychiatry and Behavioral Sciences, Duke University and Chair, IACC DSM-5 Planning Group

4:15-5:00 **OARC and IACC Business Update and Discussion**
Susan Daniels, Ph.D.
Acting Director, OARC and Executive Secretary, IACC

Meeting of the IACC

OARC/IACC Business Update

Thomas Insel, M.D.
Director, National Institute of Mental Health (NIMH) and Chair, IACC

Susan A. Daniels, Ph.D.
Acting Director, Office of Autism Research Coordination, NIMH and Executive Secretary, IACC

These slides do not reflect decisions of the IACC and are for discussion purposes only.

OARC Staff

- Susan Daniels, Ph.D., Acting Director
- Wen Chen, Ph.D., Science Policy Detailee/National Institute on Aging
- Nicole Jones, B.B.A., Senior Web Developer
- Savina Kim, Science Policy Summer Intern/Yale University
- Chumba Kitur, B.A., Operations Coordinator
- Stephanie Mok, A.B., Science Policy Detailee/NIMH Intramural Program
- Sarah Naylor, Ph.D., Science Policy Detailee/NIMH Intramural Program
- Miguelina Perez, Management Analyst
- Sarah Rhodes, Ph.D., Science Policy Analyst
- Kerri Wachter, Science Writer/Editor

DSM-5 Planning Group Update

Geri Dawson, Chair – Duke University

Members (IACC Members and Invited Experts):

Coleen Boyle – CDC
Jan Crandy – Nevada
Laura Kavanagh - HRSA
John O'Brien - CMS
Scott Michael Robertson - ASAN
John Robison
Larry Wexler -ED
Laura Carpenter - MUSC
Diane Paul - ASHA
Sue Swedo - NIMH
Amy Wetherby - FSU

Letter to Secretary on Health Coverage For Early Intervention

Sent March 25, 2013

Key points:

- In light of the strengthening evidence base for the effectiveness of early interventions, the IACC recommends support for coverage of and broad access to these treatments for children diagnosed with ASD.

- Recommend availability of coverage of early behavioral interventions for children who are insured through private insurers as well as for those who are insured through Medicaid.

- **Response received July 2, 2013**

Letter and response on the IACC website under "IACC Publications"

2013 Strategic Plan Updating Process

Strategic Plan Progress Review

- Committee will assess progress made over the past 5 years:
  - Projects funded, programs, funding
  - Biomedical and services research progress
  - Remaining gaps, new opportunities
  - Outcomes/Impacts
  - Barriers to progress, potential solutions

2013 Strategic Plan Updating Process

Planning Groups

- Committee will assemble 7 Planning Groups – One for each of the 7 Strategic Plan Questions
- Planning Groups will be composed of IACC members, external experts and community stakeholders
- Start with 2012 Planning Group members and add/substitute members as needed/desired
- Will begin assembling Planning Groups in July 2013

2013 Strategic Plan Updating Process

Data Review

- Planning Groups will review data from Portfolio Analyses 2008-2012 (5 years)
  - Cumulative funding tables
  - Objective progress charts
  - Funder totals tables
  - Funding distribution across Strategic Plan for each year
  - Funding distribution across Objectives in each Question/year
  - Listing of all projects for each objective for each year
- Question 1 Planning Group will meet via phone to review data for Question 1 and recommend any changes or additions to data formats before distributing data to all Planning Groups
- Planning Groups will also review data from other sources – Summary of Advances, Strategic Plan Updates, Publications Analysis, Combating Autism Act Report, etc.

Expert Consultation

Invited experts and community stakeholders will share input on progress, gaps, opportunities, outcomes, barriers

Process

- Hold 2-3 phone meetings per Planning Group in September/October 2013
- October – Planning groups will begin synthesizing information into draft updates, including new objectives, assessment of completed objectives and prioritization
- Subcommittees will review drafts in November
- Full committee will review and approve final Strategic Plan Update by December 31, 2013

Services Research and Policy Subcommittee

Planned projects:

- **Letter to Secretary regarding early intervention - Completed**
- **Letter to Secretary regarding adult services?**
- **Adult Services Project**
  - **Subcommittee to review toolkits to look for gaps**
  - **OARC preparing toolkits list for subcommittee review**
- **Health Disparities Project?**
- **Next meeting – Late August 2013**

Project Planning

Discussion

Meeting of the IACC

Afternoon Agenda – Continued

4:00 IACC Business – Continued

5:00 Round Robin and Open Committee Discussion

5:30 Adjournment

Next IACC Full Committee Meeting:

October 29, 2013 – NIH Neuroscience Center
6001 Executive Boulevard, Rockville, MD

Meeting of the IACC

Round Robin and Open Committee Discussion

These slides do not reflect decisions of the IACC and are for discussion purposes only.

Meeting of the IACC

Adjournment