Autism Spectrum Disorders:

Findings from the Latest ADDM Network Prevalence Report and an Update on CDC's Autism-related Activities

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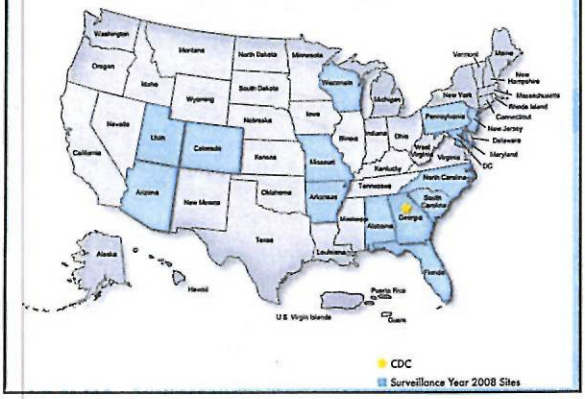
National Center on Birth Defects and Developmental Disabilities
Division of Birth Defects and Developmental Disabilities

Background

- Autism spectrum disorders (ASDs) are a group of developmental disabilities characterized by impairments in social interaction and communication and by restricted, repetitive, and stereotyped patterns of behavior
- Challenges in tracking the prevalence of autism include:
  - Complex nature of the disorders
  - Lack of biologic markers for diagnosis
  - Changes in diagnostic practices over time

Autism and Developmental Disabilities Monitoring (ADDM) Network Sites



ADDM Network Methods

- Multisite, multisource, records-based surveillance methodology

Screening and abstraction of records at multiple data sources in community

All abstracted evaluations reviewed by trained clinicians to determine autism case status

ADDM Network Autism Prevalence Reports

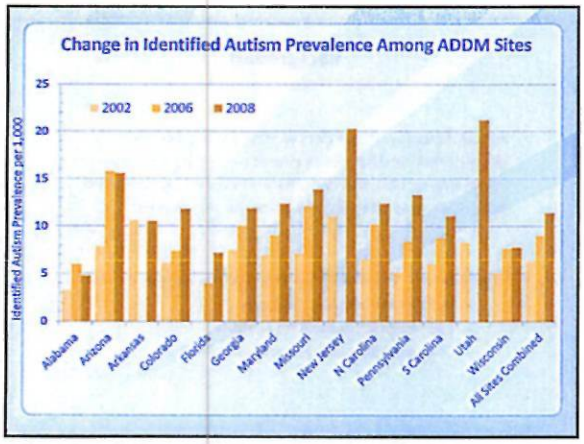
MMWR Morbidity and Mortality Weekly Report

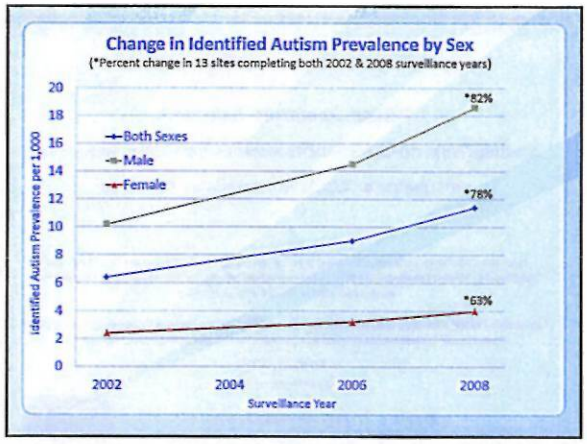
- 2007: First reports in MMWR SS representing 2000 & 2002 surveillance years
  - 1 in 150 8-year-old children in these communities identified with autism
- 2009: Second reports in MMWR SS representing 2004 & 2006 surveillance years
  - 1 in 110 8-year-old children in these communities identified with autism
  - Autism prevalence increased 57% between 2002 and 2006
- Current ADDM Network report provides:
  - 14 areas in U.S.
  - Autism prevalence estimates for the 2008 surveillance year
  - Characteristics of children identified with autism
  - Comparisons to earlier ADDM Network surveillance years (2002 & 2006)

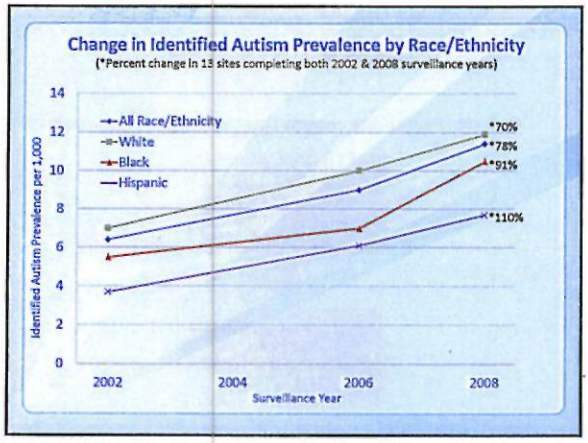
ADDM Network 2000-2008 Identified Prevalence of Autism

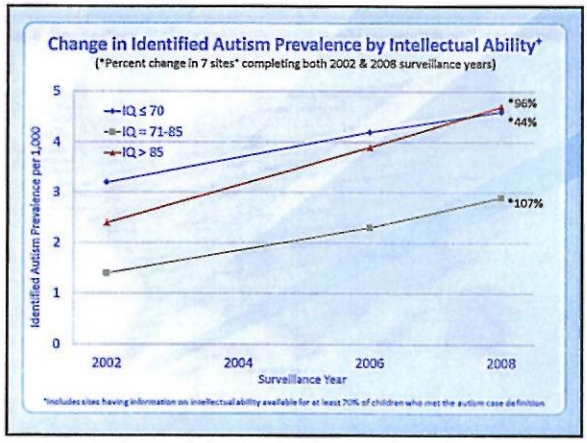
Combining Data from All Sites

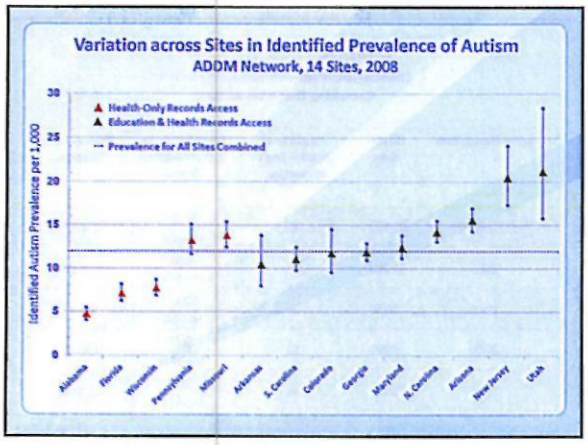
Surveillance Year	Birth Year	Number of ADDM Sites Reporting	Prevalence per 1,000 Children (Range)	About 1 in X Children...
2000	1992	6	6.7 (4.5-9.9)	1 in 150
2002	1994	14	6.6 (3.3-10.6)	1 in 150
2004	1996	8	8.0 (4.6-9.8)	1 in 125
2006	1998	11	9.0 (4.2-12.1)	1 in 110
2008	2000	14	11.3 (4.8-21.2)	1 in 88


Change in Identified Autism Prevalence Among ADDM Sites
2002
2006
2008
Identified Autism Prevalence per 1,000
Alabama
Arizona
Arkansas
Colorado
Florida
Georgia
Maryland
Missouri
New Jersey
N Carolina
Pennsylvania
S Carolina
Utah
Wisconsin
All Sites Combined


Change in Identified Autism Prevalence by Sex
(*Percent change in 13 sites completing both 2002 & 2008 surveillance years)
Both Sexes
Male
Female
*82%
*78%
*63%
Identified Autism Prevalence per 1,000
Surveillance Year


Change in Identified Autism Prevalence by Race/Ethnicity
(*Percent change in 13 sites completing both 2002 & 2008 surveillance years)
All Race/Ethnicity
White
Black
Hispanic
*70%
*78%
*91%
*110%
Identified Autism Prevalence per 1,000
Surveillance Year


Change in Identified Autism Prevalence by Intellectual Ability*
(*Percent change in 7 sites* completing both 2002 & 2008 surveillance years)
IQ ≤ 70
IQ = 71-85
IQ > 85
*96%
*44%
*107%
Identified Autism Prevalence per 1,000
Surveillance Year
*Includes sites having information on intellectual ability available for at least 70% of children who met the autism case definition


Variation across Sites in Identified Prevalence of Autism
ADDM Network, 14 Sites, 2008
Health-Only Records Access
Education & Health Records Access
Prevalence for All Sites Combined
Identified Autism Prevalence per 1,000
Alabama
Florida
Wisconsin
Pennsylvania
Missouri
Arkansas
S. Carolina
Colorado
Georgia
Maryland
N. Carolina
Arizona
New Jersey
Utah

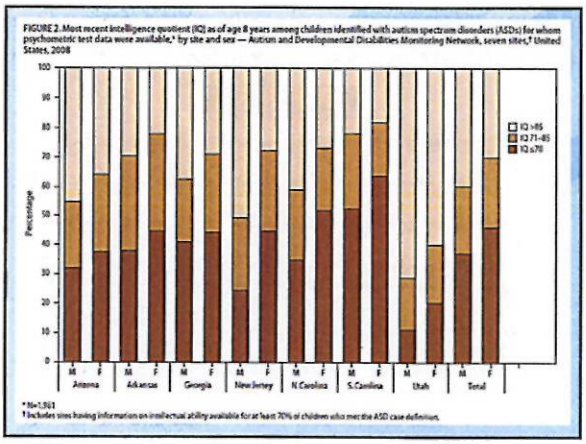
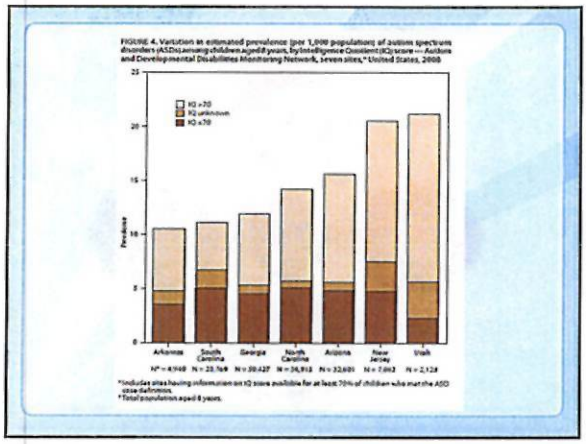


FIGURE 2. Most recent intelligence quotient (IQ) as of age 8 years among children identified with autism spectrum disorders (ASDs) for whom psychometric test data were available,* by site and sex — Autism and Developmental Disabilities Monitoring Network, seven sites,† United States, 2008
IQ >85
IQ 71-85
IQ ≤70
Percentage
Arizona
Arkansas
Georgia
New Jersey
N Carolina
S Carolina
Utah
Total
*N=1,561
†Includes sites having information on intellectual ability available for at least 70% of children who met the ASD case definition.



Change in Proportion of Children with Previously Documented Autism Classification

(Combining data from 10 sites completing 2002, 2006 and 2008 surveillance years)

Surveillance Year	2002	2006	2008
% with Previously Documented Autism Classification	72%	77%	79%

- Proportion of children meeting the autism surveillance case definition with a documented autism classification in their records increased over time in 7 of 10 sites completing all three surveillance years

Earliest Known Autism Diagnosis
Median Age and Proportion by Diagnostic Subtype
ADDM Network, 2008

(Combining data from 14 sites completing 2008 surveillance year)

Subtype of Earliest Diagnosis	Autistic Disorder	ASD/PDD	Asperger Disorder
Distribution of Subtypes	44%	47%	9%
Median Age of Earliest Diagnosis	48 Months	53 Months	75 Months

Limitations:
1) Diagnostic information obtained from evaluation records may not capture the exact age of each child's earliest diagnosis
2) Instability of diagnostic subtypes over time

Summary of Findings

- Identified prevalence of autism continues to rise in most ADDM Network communities
- Combining data from all sites:
  - 1 in 88 eight-year-old children identified with autism
    - 23% increase, 2006-2008
    - 78% increase, 2002-2008
  - Rate of increase higher among Hispanic children, black children, and children without intellectual disability
- Identified prevalence of autism varies widely
  - Across sites
  - By sex
  - By race/ethnicity

Implications of ADDM Network Findings

- Autism continues to be an important public health concern
- More children than ever are being recognized as having autism
  - Still concerned that 20% are not classified with autism by community providers, others are not recognized as early as they can be

ADDM Network Moving Forward

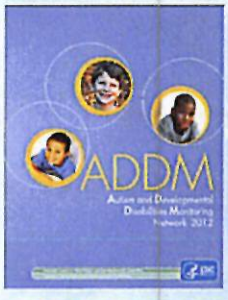
- Continue ongoing surveillance to evaluate temporal trends
- Investigator-initiated analyses
  - Timing and stability of diagnosis
  - Socioeconomic disparities
  - Intellectual functioning
  - Geospatial analyses
  - Birth characteristics
    - Parental age
    - Multiple births
    - Gestational age and birthweight

Update on CDC's Autism-related Activities

- CDC continues its work to:
  - Provide essential data on autism
  - Search for risk factors and causes
  - Develop resources that help identify children with autism as early as possible

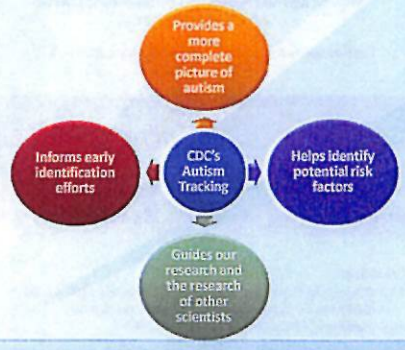
More Than Just A Number...

The Community Report on Autism



To download a copy of the Community Report, please visit www.cdc.gov/autism

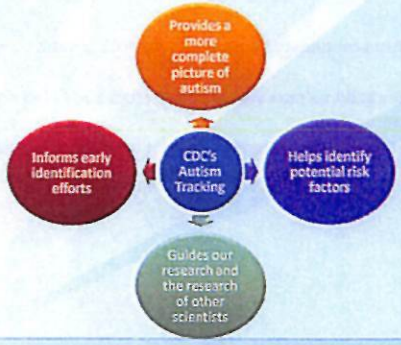
More Than Just A Number...



The Study To Explore Early Development (SEED)

- SEED will contribute to overall understanding of complex risk factors for autism
- A key strength of SEED:
  - Ability to simultaneously look at detailed information on characteristics of autism, environmental factors, and genes to see how they all interact
- To learn more, please visit www.cdc.gov/seed

More Than Just A Number...



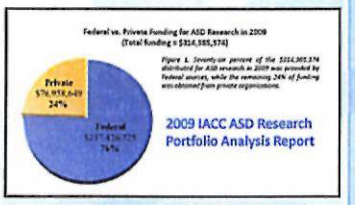
"Learn the Signs. Act Early." Program

- Provides free tools to help parents track their child's development and free resources for doctors and educators
- Works with states and communities to improve early childhood systems
- To learn more and download free tools, please visit www.cdc.gov/ActEarly

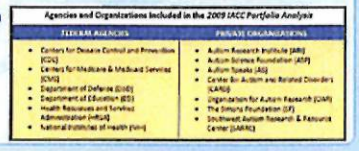
Development of Healthy People 2020 Goal

CDC's Role in the Federal Response to Autism

- CDC's current budget for autism = $21.3 million for tracking, research, and awareness activities
- Collaboration with Interagency Autism Coordinating Committee (IACC), a public/private coordination of research efforts to address autism



2009 IACC ASD Research Portfolio Analysis Report



CDC's Work In Autism and What It Means For Communities

- Through CDC's work in autism over the past 15 years:
  - We know more about which children are more likely to have autism.
  - We know at what age they are likely to be diagnosed.
  - And, we know whether progress has been made in diagnosing children with autism early.
- **This is the information communities need to plan for services and understand where improvements can be made to help children.**

Thank You! Questions?

For more information, please contact
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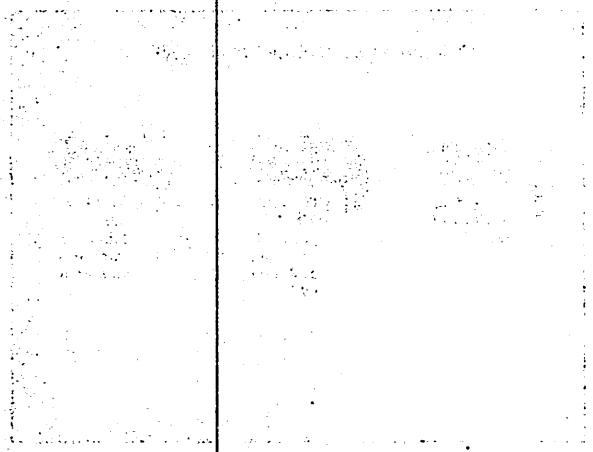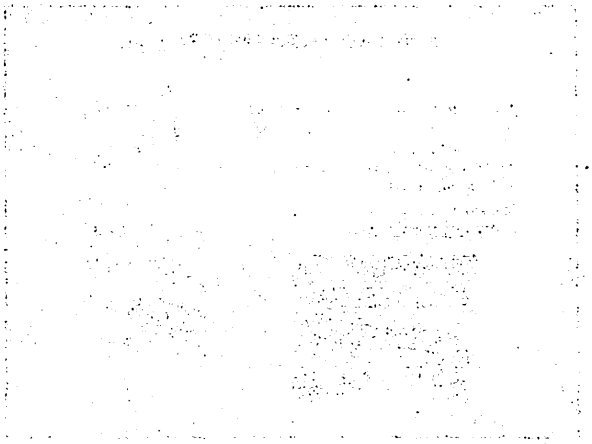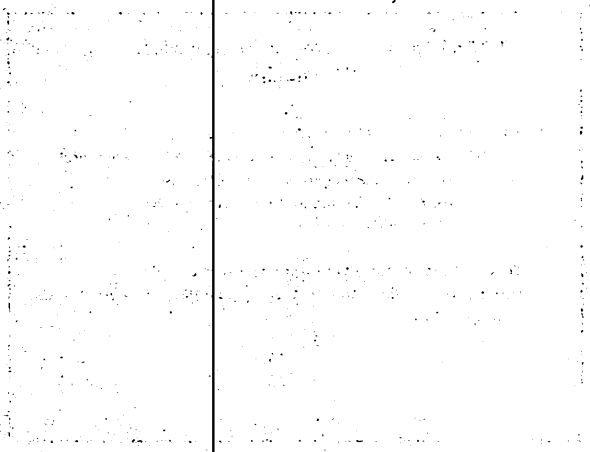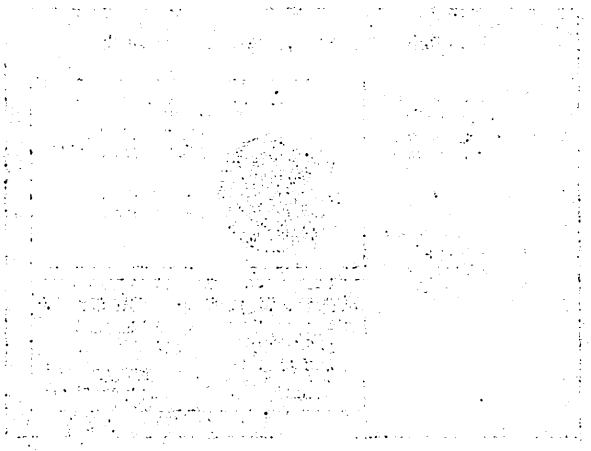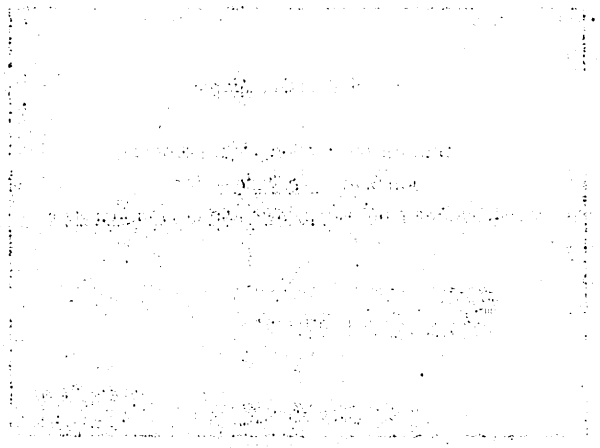
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