Prevalence of Autism Spectrum Disorder

Update from the Autism and Developmental Disabilities Monitoring Network
Kelly Kast, MSPH

Objectives

• Overview of autism spectrum disorder
• Describe the Autism and Developmental Disabilities Monitoring (ADDM) Network
• Describe three key points from the recent prevalence data

Autism Spectrum Disorder (ASD)

A developmental disorder defined by challenges with social communication and interaction, and highly focused interests and/or repetitive behaviors

• Intelligence: Can range from gifted to severely challenged
• Communication: Can range from nonverbal to extremely verbal
• Behaviors: Can be mild to intense
• Sensory: Can range from hyposensitive to hypersensitive
• Motor: Can range from uncoordinated to coordinated

ADDM Network

A group of programs funded by CDC to estimate the number of 8-year-old children with ASD living in different areas of the United States.

Goals:
• Describe the population of children with ASD.
• Compare ASD in different areas of the country.
• Identify changes in ASD over time.
• Understand the impact of ASD and related conditions.

Standard for setting ASD prevalence estimates in the U.S.

ADDM Network methods for ASD case ascertainment

• Multisite, multisource (educational and healthcare settings) records-based surveillance methodology

Phase 1:
Screening and abstraction of records for children estimated to have ASD

Phase 2:
Records meeting requirements for abstraction go on to phase 2
Children with described behaviors that are consistent with DSM-IV-TR criteria for autism are considered for inclusion as ASD surveillance cases

"We are learning more about autism and how to be a better community for those affected because we are getting better data. We aren’t there yet; we need to scale up the services and supports to meet the demand, but we also understand that is the next step. Knowing is half the task, and that comes from having good data"

- Kathryn Dran, PMP
Colorado parent
Prevalence of ASD, ADDM Network, 2012

- Overall, prevalence of ASD remains at 14.6 kids with ASD per 1,000 8-year-old children. (1 in 68)
- Range: 8.2 (Maryland health only) to 24.6 (New Jersey)

Colorado ADDM Project Monitoring Area

7-county Denver metropolitan area
- Adams
- Arapahoe
- Boulder
- Broomfield
- Denver
- Douglas
- Jefferson

Colorado ADDM Project, 2012

- Chris Wells, PhD, MS
- Kelly Kast, MSPH (Project Coordinator)
- Vicki Bondurant (Abstractor)
- Leon Madera, BSN (Abstractor)
- Joan Wencen, RN (Abstractor)
- Cynthia Vogel, MS (Abstractor)

- Cordelia Robinson, PhD, RN
- Judy Reaven, PhD (Expert Reviewer)
- Terry Hall, MA, CCC-SLP (Expert Reviewer)
- Patti LaVesser, PhD, OTR (Expert Reviewer)

ASD prevalence per 1,000 8-year-olds, ADDM Network, 2000-2012

- 2000: 6.7
- 2002: 6.6
- 2004: 8.0
- 2006: 9.0
- 2008: 11.3
- 2010: 14.7
- 2012: 14.6
ASD prevalence per 1,000 8-year-olds, Denver metro area, ADDM Network, 2000-2012

<table>
<thead>
<tr>
<th>Monitoring year</th>
<th>Prevalence</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>10.8</td>
<td>10.2 - 11.4</td>
</tr>
<tr>
<td>2010</td>
<td>9.9</td>
<td>9.5 - 10.3</td>
</tr>
<tr>
<td>2008</td>
<td>7.5</td>
<td>6.9 - 8.0</td>
</tr>
</tbody>
</table>

Demographics of children with ASD, Denver metropolitan area, 2012

<table>
<thead>
<tr>
<th>Sex</th>
<th>Prevalence</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>17.1</td>
<td>15.8 - 18.3</td>
</tr>
<tr>
<td>Female</td>
<td>4.7</td>
<td>4.4 - 5.0</td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White, non-Hispanic</td>
<td>13.2</td>
<td>11.0 - 15.4</td>
</tr>
<tr>
<td>Black, non-Hispanic</td>
<td>10.5</td>
<td>7.2 - 16.1</td>
</tr>
<tr>
<td>Asian, non-Hispanic</td>
<td>8.4</td>
<td>6.2 - 10.5</td>
</tr>
<tr>
<td>Hispanic, all races</td>
<td>6.3</td>
<td>5.3 - 8.3</td>
</tr>
</tbody>
</table>

Clinical characteristics of children with ASD, Denver metropolitan area, 2012

• Intellectual ability: Of the 72% tested (n=313), 24% had an IQ ≤ 70.
• Adaptive functioning: Of the 42% tested (n=185), 39% had a score of ≤ 70.

Age of evaluation, Denver metropolitan area, ADDM Network, 2012

• 86% of children identified with ASD had concerns about their development noted in records by age 3 years.
• 41% of children were evaluated before 3 years of age.*

*Includes only children linked to in-state birth certificates

Prevalence of ASD by race/ethnicity, Denver metro area, 2008 - 2012

Early identification

• Increasing the percent of children who receive age-appropriate developmental screening is a Maternal and Child Health priority in Colorado.

Resources: www.colorado.gov/pacific/cdphe/mch-implementation-teams-mits; coloradoabcd.org
Percent of children with ASD with a diagnosis noted in record and median age of diagnosis, ADDM Network, 2012

<table>
<thead>
<tr>
<th></th>
<th>ADDM network</th>
<th>Range</th>
<th>Denver metro area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent with ASD diagnosis noted in record</td>
<td>73.8%</td>
<td>(63.8% to 86.5%)</td>
<td>63.8%</td>
</tr>
<tr>
<td>(n=278)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median age of ASD diagnosis*</td>
<td>50 months</td>
<td>(46 mo. to 60 mo.)</td>
<td>55 months</td>
</tr>
</tbody>
</table>

*Includes only those cases with age of diagnosis noted in the record.

Resources and contact information
Kelly R. Kast, MSPH
kelly.kast@state.co.us
303-692-2680

www.cdc.gov/mmwr
www.cdc.gov/ncbddd/autism/addm.html

Educational classification of children identified with ASD, Denver metropolitan area, 2012

<table>
<thead>
<tr>
<th>Education classification</th>
<th>2012 n=52</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autism</td>
<td>44.2%</td>
</tr>
<tr>
<td>Other Physical Disability</td>
<td>9.6%</td>
</tr>
<tr>
<td>Speech/Language Disability</td>
<td>23.1%</td>
</tr>
<tr>
<td>Multiple Disabilities</td>
<td>3.9%</td>
</tr>
<tr>
<td>Significant Identifiable Emotional Disability</td>
<td>7.7%</td>
</tr>
<tr>
<td>Significant Limited Intellectual Capacity</td>
<td>3.9%</td>
</tr>
<tr>
<td>Hearing/Vision Disability</td>
<td>0%</td>
</tr>
<tr>
<td>Specific Learning Disability</td>
<td>5.8%</td>
</tr>
<tr>
<td>Traumatic Brain Injury</td>
<td>0%</td>
</tr>
</tbody>
</table>

Summary
The percent of 8-year-old children identified with ASD remained the same as the number two years ago - 1 in 68.

- The prevalence is not the same among all race/ethnic groups.
- Most children are evaluated for developmental concerns and diagnosed with ASD after age 3 years.
- Both schools and health facilities play a vital role in evaluating and serving children with ASD.