

# Autism and Prematurity

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# Definitions

## Autism

-difficulty with relationships, communication, language, abstract concepts

## Prematurity

-born before the 37th week of pregnancy

# Who

-Babies who were born premature that visited the center between 2011-2016

What

Where

When

Why

Who

**What**

**-Is there an increased rate of autism? Are there certain co-morbidities that are more common? Are there factors that we can identify that are com**

Where

When

Why

Who  
What

**Where**

**-The Weinberg Child Development Center**

When

Why

Who  
What  
Where

**When**

**2011-2016-**

Why

Who  
What  
Where  
When

**Why**

**-Are there commonalities that we can use as predictors?**

# Is autism more common in premature babies?

- Alberta, Canada Study

- 273,343 births in Alberta, Canada, from 1998 to 2004 grouped by # of weeks of gestation.
- 17,830 born premature (anytime short of 37 weeks of gestation)
- **Observed increase risk of ASD with shorter gestation**
- Results were not affected by either sex or measures of fetal growth
- Gestational Age at Birth and Risk of Autism Spectrum Disorders in Alberta, Canada. Leavey, Anna et al. The Journal of Pediatrics , Volume 162 , Issue 2 , 361 - 368

- Washington University in St. Louis Study

- MRIs from 58 babies born full term, 78 born at least 10 weeks premature compared
- **Significant differences in white matter tracts in the brain**
- Rogers C, Herzmann C, Smyser T, Shimony J, Ackerman J, Neil J, Smyser C. Impact of preterm birth on structural and functional connectivity in neonates. Abstract was presented at Neuroscience 2015, in Chicago.



# General Findings

- Cohort of 2011-2016 premature babies referred to Child Development Centre for F/U:
  - 837 children: 488 males and 349 females
  - Multiple Pregnancies: 410 (49%) twins, 30 (3.6%) triplets
  - Mean Week of Delivery: 31.8 weeks (range 24-37)
  - Mean Birth Weight: 1570 gr (368-3550 gr)



<u>Diagnosis</u>	N	%
Global Developmental Delay	49	5.9%
Cerebral Palsy	49	5.9%
ADHD	19	2.3%
<b>Autism Spectrum Disorder</b>	<b>35</b>	<b>4.2%</b>

# ASD Findings

- 35 Total: 25 Males, 10 Females
- 18 Twins (51%)
- No significant difference between birth week—30.5 in ASD vs 31.8 [ $t(35.8)=1.9, p>0.05$ ]
- No significant difference in birth weight—1484 grams in babies with autism vs 1573 grams [ $t(35.6)=0.73, p>0.05$ ]

# Birth Week

GDD (N=49)	CP (N=49)	ASD (N=35)	אבחנה / שבוע לידה
11 (11.6%)	19 (20%)	10 (10.5%)	24-27 (N=95)
7 (7.7%)	13 (14.3%)	4 (4.3%)	28-29 (N=91)
13 (8.9%)	8 (5.5%)	6 (4.1%)	30-31 (N=146)
7 (3%)	6 (2.5%)	5 (2.1%)	32-33 (N=237)
9 (4.2%)	2 (0.9%)	9 (4.2%)	34-35 (N=212)
2 (3.9%)	1 (1.9%)	1 (1.9%)	36-37 (N=51)

There was a statistically significant difference in birth week born for all three of these disorders

ASD:  $X^2(5) = 12.6, p < 0.05$ ; CP:  $X^2(5) = 61.3, p < 0.001$ ; GDD:  $X^2(5) = 13.5, p < 0.05$

# What's Next?

- Where and when diagnosis was made
- Additional birth information
- Prospective study

# THANK YOU

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