

The Frequency of Cerebral Palsy in the Population: Results from Population-Based Surveillance

Waisman Center Cerebral Palsy Day with the Experts

Maureen Durkin
University of Wisconsin – Madison

Deborah Christensen
National Center on Birth Defects and Developmental Disabilities

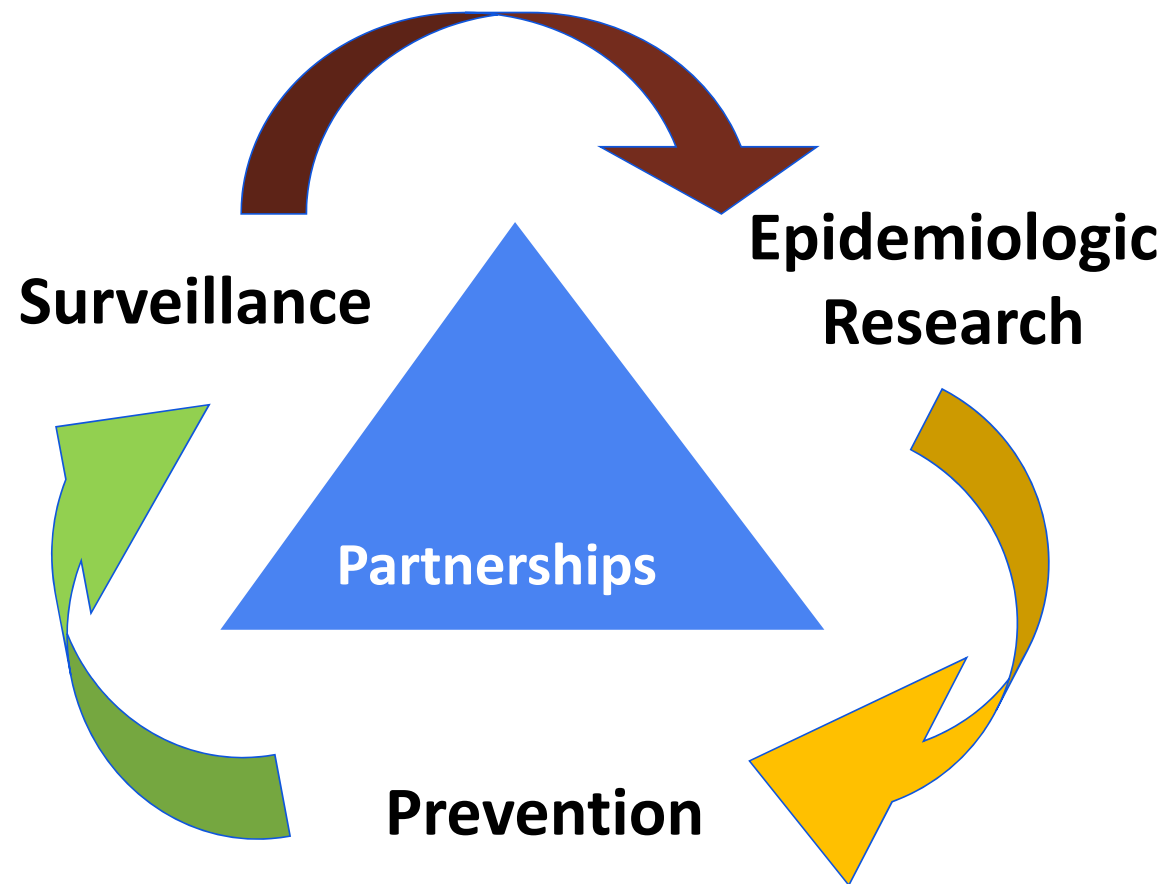


Presentation Overview



- Overview of cerebral palsy (CP) surveillance
- Frequency and characteristics of CP
- CP and low birth weight
- CP and motor function
- How can we use these data to improve outcomes and quality of life for individuals with CP?

Public Health Model



What is Public Health Surveillance?



- Ongoing, systematic collection, analysis, and interpretation of data (e.g., regarding agent/hazard, risk factor, exposure, health event)
- Also referred to as “tracking” or “monitoring”

Teutsch SM, Churchill RE. Principles and practice of public health surveillance: 2nd ed. Oxford University Press. 2000.

1979: How Many Children Have a Developmental Disability?



The Impetus for Cerebral Palsy Surveillance at CDC



- 1968:** Start of birth defects surveillance at CDC
- 1979-80:** Request for presentation of data on intellectual disability and cerebral palsy
- 1981:** EIS Officer assigned to Birth Defects Branch to study developmental disabilities
- 1981-83:** Pilot study in DeKalb County, GA



CDC's Ongoing Population-Based Surveillance



Multi-source, records-based surveillance methodology



CDC's Autism and Developmental Disabilities Monitoring (ADDMM) Network CP Sites



- Georgia
- Missouri
- Wisconsin

The Goals of the ADDM CP Network

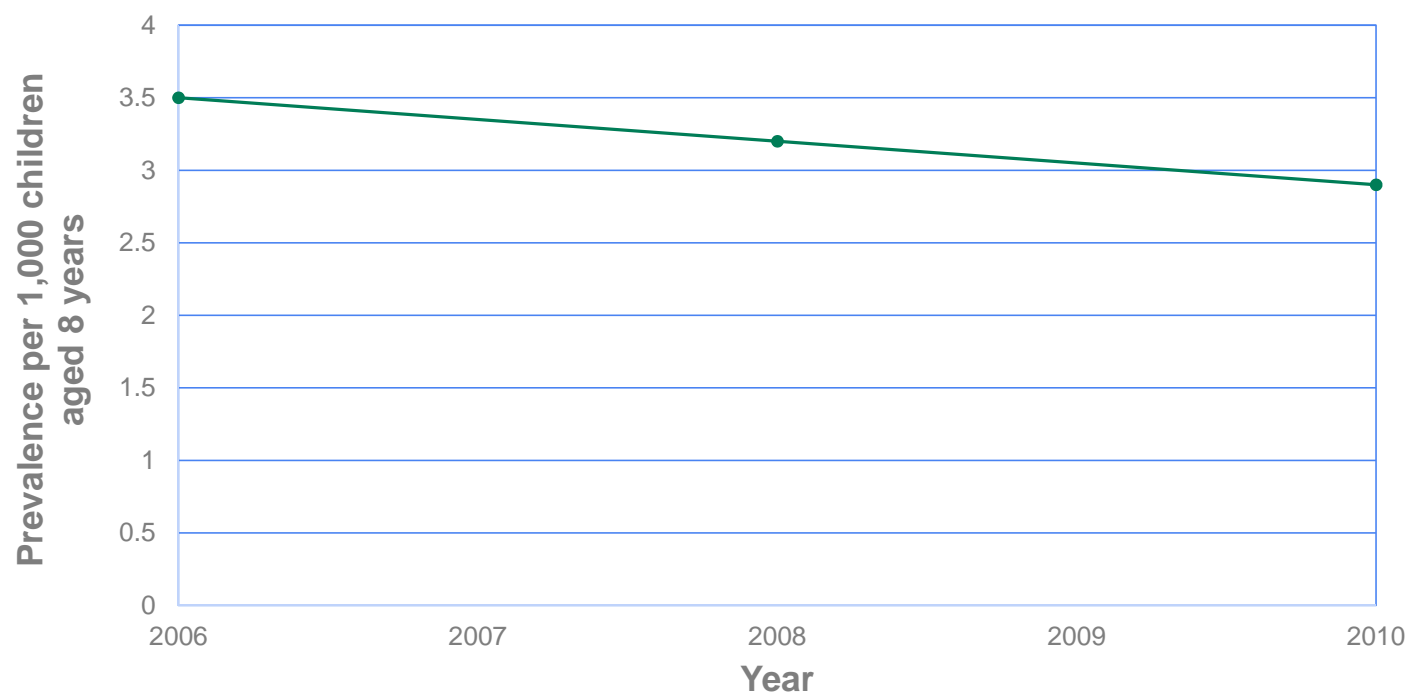


- Obtain a complete count of the number of children with CP in each project area.
- Provide comparable, population-based CP prevalence estimates in different sites.
- Study if CP is more common in some groups of children than in others, and if rates are changing over time.



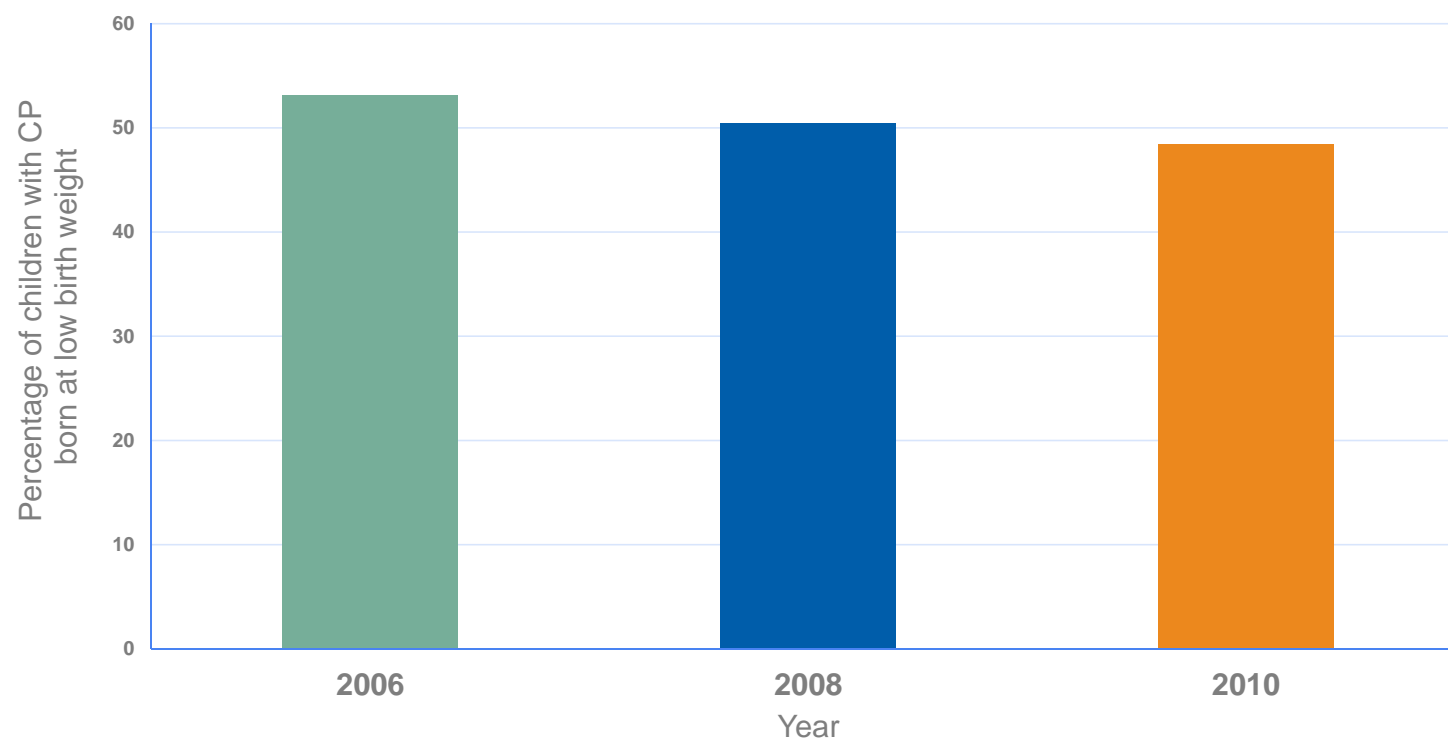
What can we learn from ADDM CP network surveillance?

Frequency of Cerebral Palsy ADDM Network, 2006-2010



Durkin et al., 2016

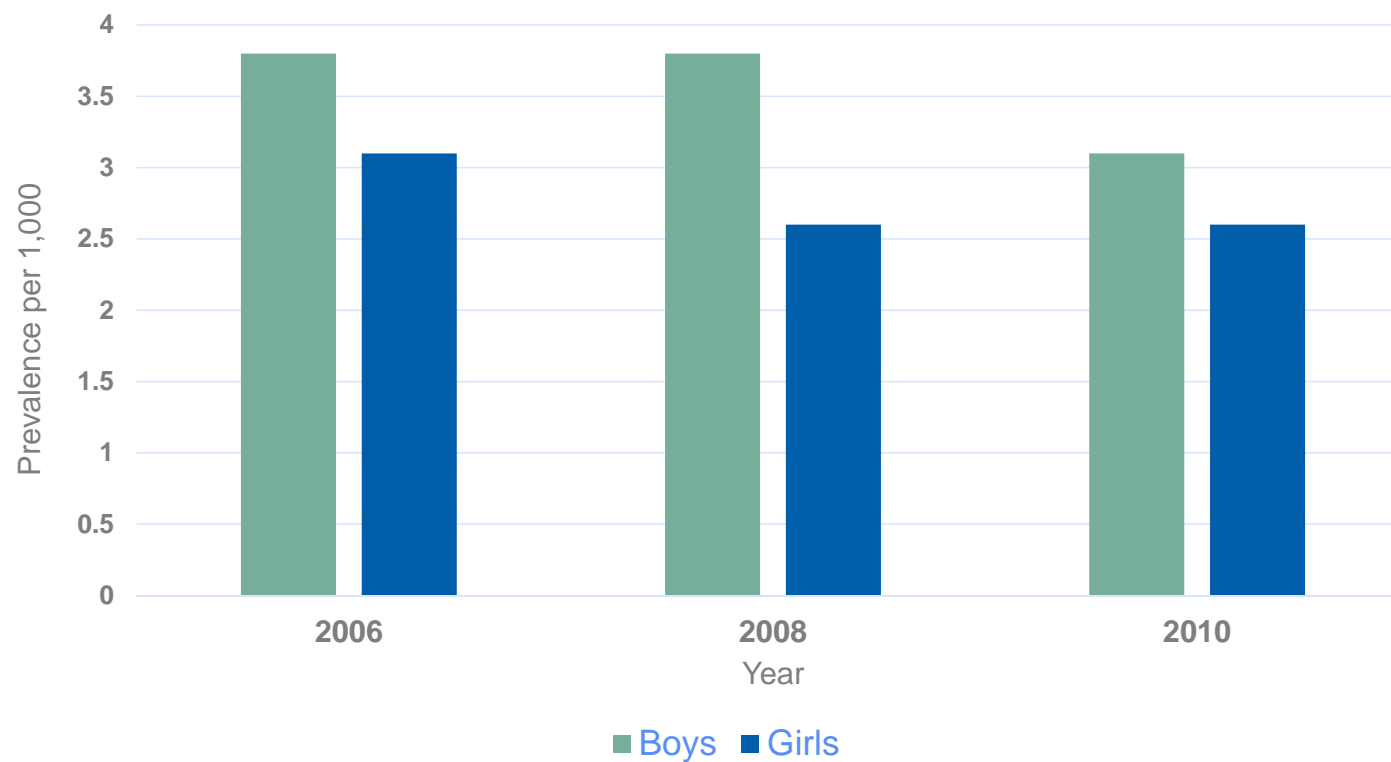
Percentage of Low Birth Weight children with CP ADDM Network, 2006-2010



Durkin et al., 2016

Cerebral Palsy More Common among Boys

ADDMM Network, 2006-2010

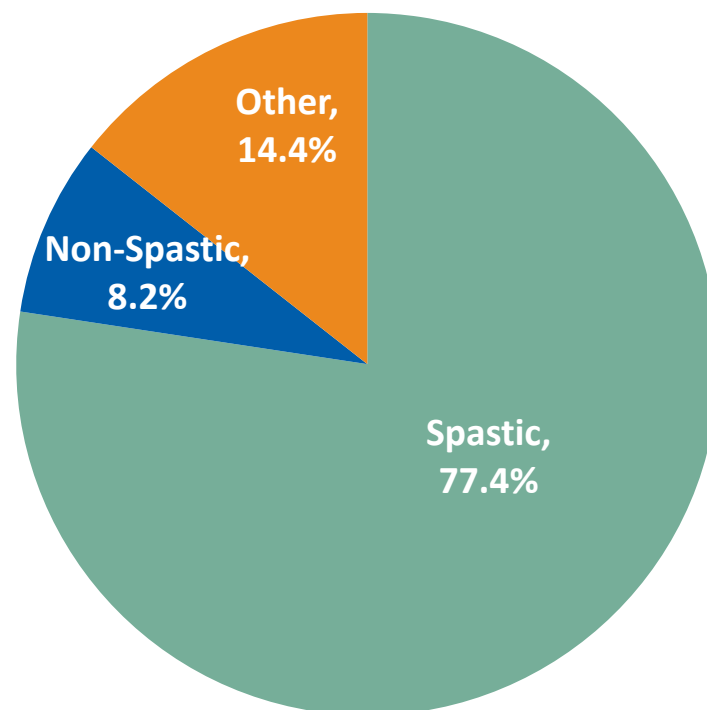


Durkin et al., 2016

Majority of Children Have Spastic Cerebral Palsy



- Non-Spastic includes dyskinetic, ataxic, hypotonic, and dyskinetic-ataxic
- Other includes spastic-ataxic, spastic-dyskinetic, and cerebral palsy not otherwise specified



Many Children with Cerebral Palsy Have Co-Occurring Epilepsy and/or Autism

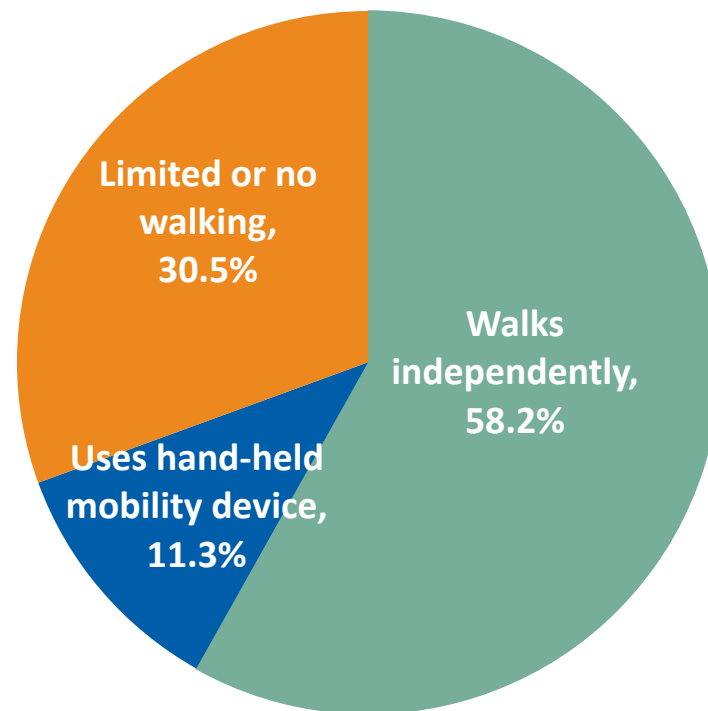


- **41%** with co-occurring epilepsy
- **6.9%** with co-occurring autism
 - Overall prevalence of autism among US children is about 1-2% →
Prevalence of autism among children with CP seems to be higher than among their peers without CP

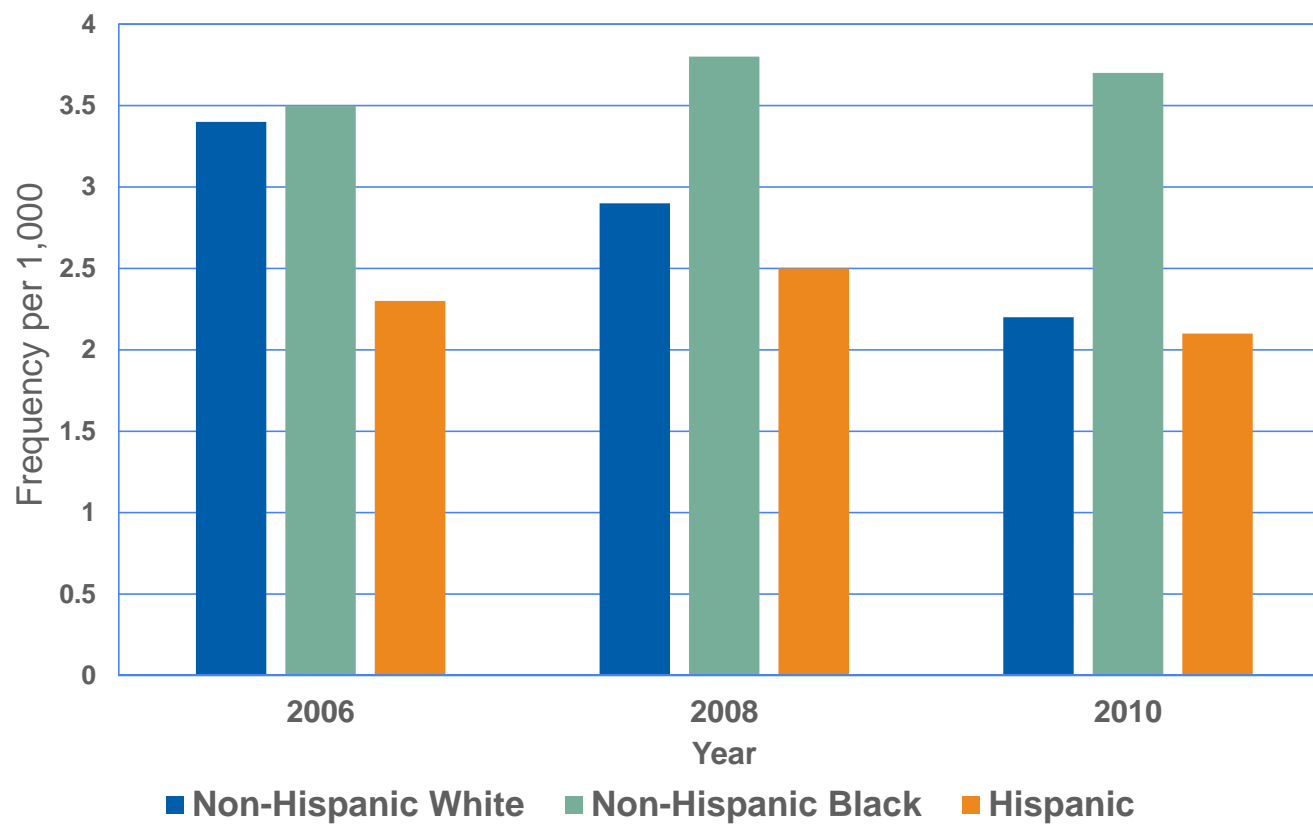
Over Half of Children with Cerebral Palsy Walk Independently



- Walking ability data available on 74.7% of children identified with CP by ADDM CP Network



Cerebral Palsy More Common among Black Children than White Children, ADDM Network 2006-2010



Durkin et al., 2016

Role of Socioeconomic Status (SES) and Perinatal Factors in Racial/Ethnic Disparities






To investigate racial/ethnic disparities, we analyzed the data and found the following:

1. CP frequency decreases with higher SES.
2. Racial/ethnic disparity in CP risk is only partially explained by racial/ethnic disparities in SES.
3. Perinatal factors (including preterm birth and low birth weight) help explain the association between race and CP risk.



Racial/Ethnic Disparities in Severity of Gross Motor Function



Gross Motor Function Classification Scale (GMFCS)	Black-White Prevalence Odds Ratio
GMFCS Level I & II 	1.0
GMFCS Level III 	1.4
GMFCS Level IV & V 	2.0

Racial/Ethnic Disparities in Severity of Gross Motor Function



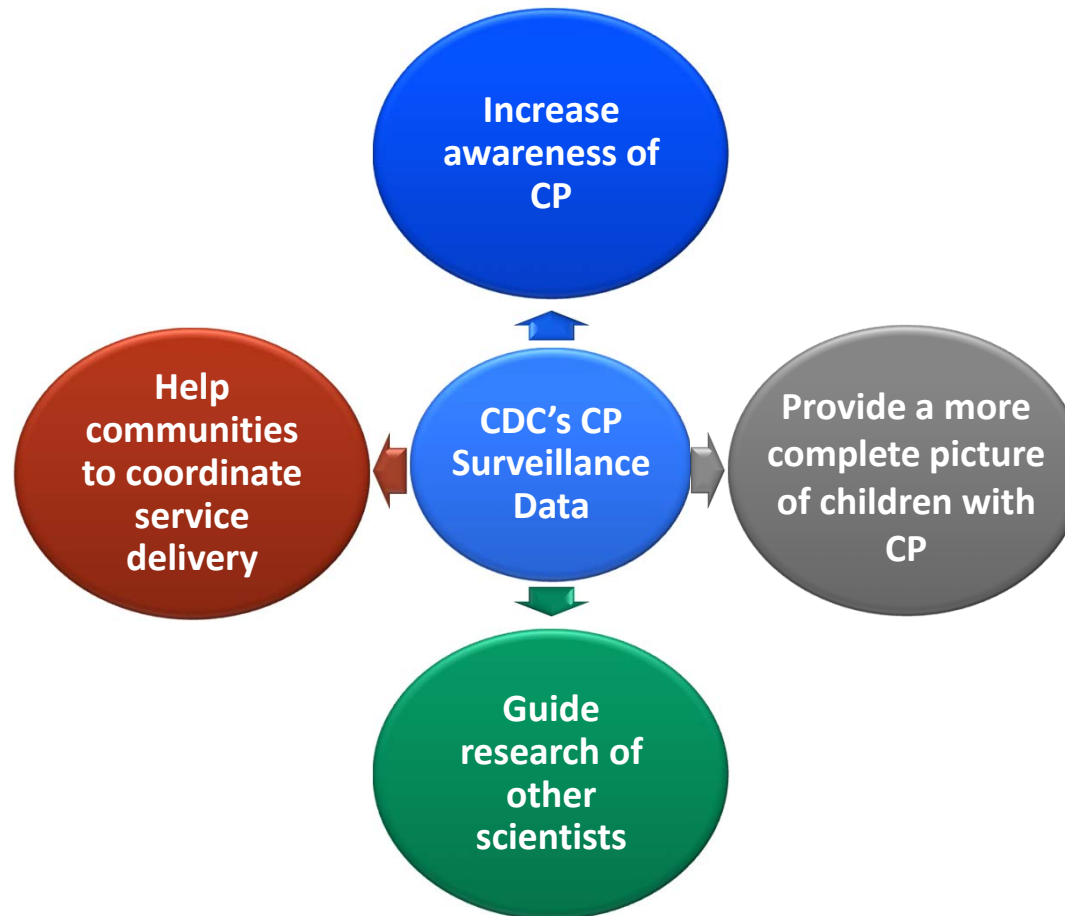
Potential mechanisms?

- Racial differences in risk factors
- Access to interventions
- Under-identification of mild CP in black children



- Maenner et al 2016

More Than Just a Number...



Summary



- The frequency of CP in the ADDM CP Network declined between 2006 and 2010.
- Racial/ethnic disparities exist among children with CP
 - Black children were more likely to have CP, and this may be due to perinatal risk factors.
 - Black children with CP were more likely to have limited or no walking ability.
- Further studies of the population characteristics of CP, including disparities, can help ensure that all children reach their full potential.

Acknowledgements

“It Takes A Village”



- It takes many individuals at each ADDM Network site to run our monitoring programs, including
 - Primary investigators, project coordinators, abstractors, data managers, programmers, clinician reviewers, epidemiologists, and other project staff.
- They are dedicated, creative, hard-working, and resourceful, and we are thankful for each and every one of them!

Thank you!



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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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www.cdc.gov/cp

