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# STA220H: Practice of Statistics 1

*Section L0301:  
Health & Life Sciences*

*Dr. A. Gibbs*




Statistical Sciences  
UNIVERSITY OF TORONTO

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## RETRACTED: Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children

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### Summary

#### Background

We investigated a consecutive series of children with chronic enterocolitis and regressive developmental disorder.

#### Methods

12 children (mean age 6 years [range 3–10], 11 boys) were referred to a paediatric gastroenterology unit with a history of normal development followed by loss of acquired skills, including language, together with diarrhoea and abdominal pain. Children underwent gastroenterological, neurological, and developmental assessment and review of developmental records. Ileocolonoscopy and biopsy sampling, magnetic-resonance imaging (MRI), electroencephalography (EEG), and lumbar puncture were done under sedation. Barium follow-through radiography was done where possible. Biochemical, haematological, and immunological profiles were examined.

#### Findings

Onset of behavioural symptoms was associated, by the parents, with measles, mumps, and rubella vaccination in eight of the 12 children, with measles infection in one child, and otitis media in another. All 12 children had intestinal abnormalities, ranging from lymphoid nodular hyperplasia to aphthoid ulceration. Histology showed patchy chronic inflammation in the colon in 11 children and reactive ileal lymphoid hyperplasia in seven, but no granulomas. Behavioural disorders included autism (nine), disintegrative psychosis (one), and possible postviral or vaccinal encephalitis (two). There were no focal neurological abnormalities and MRI and EEG tests were normal. Abnormal laboratory results were significantly raised urinary methylmalonic acid compared with age-matched controls ( $p=0.003$ ), low haemoglobin in four children, and a low serum IgA in four children.

#### Interpretation

We identified associated gastrointestinal disease and developmental regression in a group of previously normal children, which was generally associated in time with possible environmental triggers.

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[J Linnell](#) PhD <sup>a</sup>, [DM Casson](#) MRCP <sup>b</sup>, [M Malik](#) MRCP <sup>b</sup>, [M Berelowitz](#) <sup>c</sup>, [J Harvey](#) FRCP <sup>d</sup>, [A Valentine](#) FRCR <sup>e</sup>, [SE Davies](#) MRCPath <sup>a</sup>, [JA Walker-](#)

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### Interpretation

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## Perpetuating the view, even after the retraction

**Jenny McCarthy**

Photo downloaded from  
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“And the reason why the medical community doesn't support is because us moms aren't treating autism, we are treating a vaccine injury.”

Quote from

<http://www.foxnews.com/story/2008/06/09/jenny-mccarthy-on-record-on-her-autism-crusade/>

**Los Angeles Times**

September 2, 2014

# **Plunge in kindergartners' vaccination rate worries health officials**

# Plunge in kindergartners' vaccination rate worries health officials

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## Vaccine Safety

### Vaccine Safety

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## Vaccines not associated with risk of autism

A new study evaluating parents' concerns of "too many vaccines too soon" and autism has been published online in the [Journal of Pediatrics](#) [PDF - 256 KB] [f](#), March 29, 2013. It adds to the conclusion of a [2004](#) [f](#) comprehensive review by the Institute of Medicine (IOM) that there is not a causal relationship between certain vaccine types and autism. The results provide relevant data for the current childhood immunization schedule.



"Vaccines not associated with risk of autism"

[CDC Statement on Pandemrix](#)

[Fainting \(Syncope\)](#)

## CDC study (2004)

- Published in journal *Pediatrics*
- Compared 624 children with autism, ages 3 to 10, with 1824 developmentally healthy children
- Found no link between the age children were given their first MMR vaccination and autism diagnoses
- Did not find a *statistically significant* increased risk for a particular racial group



## Reanalysis of the CDC data:

- Published in the journal *Translational Neurodegeneration* on August 8, 2014
- Concluded that African-American boys are at higher risk of autism if they're given the MMR vaccine before 24 months old then after 24 months old

[Transl Neurodegener.](#) 2014 Aug 8;3:16. doi: 10.1186/2047-9158-3-16. eCollection 2014.

### **Measles-mumps-rubella vaccination timing and autism among young african american boys: a reanalysis of CDC data.**

[Hooker BS.](#)

#### **Author information**

#### **Abstract**

**BACKGROUND:** A significant number of children diagnosed with autism spectrum disorder suffer a loss of previously-acquired skills, suggesting neurodegeneration or a type of progressive encephalopathy with an etiological basis occurring after birth. The purpose of this study is to investigate the effect of the age at which children got their first Measles-Mumps-Rubella (MMR) vaccine on autism incidence. This is a reanalysis of the data set, obtained from the U.S. Centers for Disease Control and Protection (CDC), used for the Destefano et al. 2004 publication on the timing of the first MMR vaccine and autism diagnoses.

**METHODS:** The author embarked on the present study to evaluate whether a relationship exists between child age when the first MMR vaccine was administered among cases diagnosed with autism and controls born between 1986 through 1993 among school children in metropolitan Atlanta. The Pearson's chi-squared method was used to assess relative risks of receiving an autism diagnosis within the total cohort as well as among different race and gender categories.

**RESULTS:** When comparing cases and controls receiving their first MMR vaccine before and after 36 months of age, there was a statistically significant increase in autism cases specifically among African American males who received the first MMR prior to 36 months of age. Relative risks for males in general and African American males were 1.69 ( $p=0.0138$ ) and 3.36 ( $p=0.0010$ ), respectively. Additionally, African American males showed an odds ratio of 1.72 ( $p=0.0200$ ) for autism cases in



Using the current demographics of the US to give a rough estimate, there were approximately 40 African American boys in the study. To compare the risk of autism in these boys between those vaccinated before age 2 vs after age 2, the sample size is:


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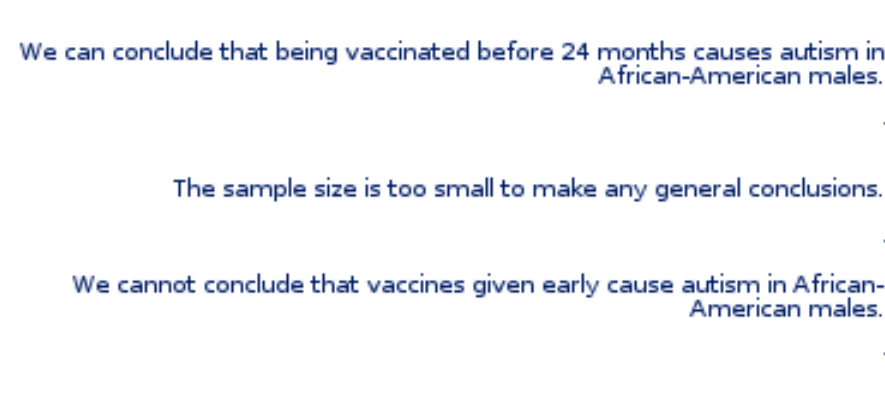


The paper quoted the odds ratio, the ratio of the odds of developing autism for African-American males who were vaccinated before 24 months to those vaccinated after 24 months. The odds ratio is statistically significantly different from 1. What can be concluded?

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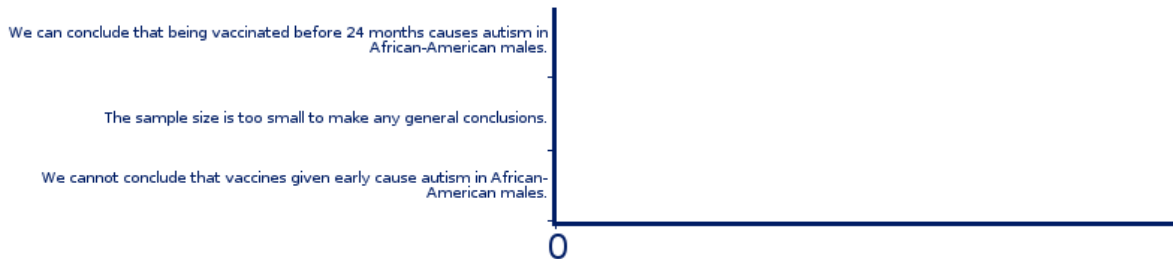


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- We can conclude that being vaccinated before 24 months causes autism in African-American males.
- The sample size is too small to make any general conclusions.
- We cannot conclude that vaccines given early cause autism in African-American males.

The odds ratio is 1.73. If there was no difference in the chance of getting autism depending on when the vaccine was administered, the probability is 0.02 of getting an odds ratio that is that different from 1. Is this convincing evidence of a difference?

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The author of the paper is a scientific advisor for the Focus Autism Foundation. How might this affect the study findings?

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# Expression of concern: measles-mumps-rubella vaccination timing and autism among young African American boys: a reanalysis of CDC data

BioMed Central

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The electronic version of this article is the complete one and can be found online at:

<http://www.translationalneurodegeneration.com/content/3/1/18>

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## Abstract

The Publisher of this article [1] has serious concerns about the validity of its conclusions because of possible undeclared competing interests of the author and peer reviewers. The matter is undergoing investigation. In the meantime, readers are advised to treat the reported conclusions of this study with caution.

Further action will be taken, if appropriate, once our investigation is complete.



# Expression of concern: measles-mumps-rubella vaccination timing and autism among young African American boys: a reanalysis of CDC data

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can be found online at:

[8](#)

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*“It is easy to lie with statistics,  
but easier to lie without them.”*

- Fred Mosteller