EXHIBITS Ka-Kd

The original article that was analyzed by Dr. Brian Hooker

Age at First Measles-Mumps-Rubella Vaccination in Children With Autism and School-Matched Control Subjects: A Population-Based Study in Metropolitan Atlanta

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ABSTRACT. *Objective.* **To compare ages at first measles-mumps-rubella (MMR) vaccination between children with autism and children who did not have autism in the total population and in selected subgroups, including children with regression in development.**

Methods. **A case-control study was conducted in metropolitan Atlanta. Case children (*N* = 624) were identified from multiple sources and matched to control children (*N* = 1824) on age, gender, and school. Vaccination data were abstracted from immunization forms required for school entry. Records of children who were born in Georgia were linked to Georgia birth certificates for information on maternal and birth factors. Conditional logistic regression was used to estimate odds ratios (ORs).**

Results. **The overall distribution of ages at MMR vaccination among children with autism was similar to that of matched control children; most case (70.5%) and control children (67.5%) were vaccinated between 12 and 17 months of age. Similar proportions of case and control children had been vaccinated before 18 or before 24 months. No significant associations for either of these age cutoffs were found for specific case subgroups, including those with evidence of developmental regression. More case (93.4%) than control children (90.6%) were vaccinated before 36 months (OR: 1.49; 95% confidence interval: 1.04–2.14 in the total sample; OR: 1.23; 95% confidence interval: 0.64–2.36 in the birth certificate sample). This association was strongest in the 3- to 5-year age group.**

Conclusions. **Similar proportions of case and control children were vaccinated by the recommended age or shortly after (ie, before 18 months) and before the age by which atypical development is usually recognized in children with autism (ie, 24 months). Vaccination before 36 months was more common among case children than control children, especially among children 3 to 5 years of age, likely reflecting immunization requirements for enrollment in early intervention programs. *Pediatrics* 2004; 113:259–266; *autism, autism spectrum disorders, MMR vaccine, immunizations, epidemiology.***

ABBREVIATIONS. MMR, measles-mumps-rubella; IOM, Institute of Medicine; MADDSP, Metropolitan Atlanta Developmental Disabilities Program; DSM-IV, *Diagnostic and Statistical Manual of Mental Disorders, 4th Edition*; ASD, autism spectrum disorder; MR, mental retardation; OR, odds ratio; CI, confidence interval.

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Autism is a serious, life-long developmental disorder characterized by marked impairments in social interactions; communication skills; and repetitive, restrictive, or stereotyped behaviors, interests, and activities.[1] Recent studies have suggested that the prevalence of autism is higher (30–60 per 10 000 children)[2–5] than in studies conducted 15 to 20 years ago (4–5 per 10 000).[6–10] The apparent increase in prevalence, coupled with reports of increasing numbers of children with autism being served by schools and service agencies,[11–14] has prompted concerns that environmental exposures might be causing autism. Vaccines, particularly the measles-mumps-rubella (MMR) vaccine, are among the exposures for which there has been a great deal of speculation of a possible association with autism.

Wakefield et al[15] were the first to propose that MMR vaccine might be causally linked to autism. They published a report describing 12 pediatric patients with inflammatory bowel conditions and regressive developmental disorders, mostly autism. In 8 of the 12 cases, the children's parents or pediatricians suggested that MMR vaccine might have contributed to the onset of behavioral problems. The same investigators subsequently proposed a new syndrome consisting of certain gastrointestinal conditions associated with behavioral regression[16] and reported identifying laboratory evidence of measles virus genome in the peripheral white blood cells and bowel biopsy specimens of a few such patients. The investigators, however, did not distinguish whether the virus was wild measles virus or vaccine strain virus.[17,18] Several epidemiologic studies have not found an association between MMR vaccination and autism.[19–24] The Institute of Medicine (IOM)[25] reviewed the MMR-autism hypothesis and rejected a causal association at the population level but encouraged additional studies to evaluate more fully the possibility that there are subgroups of children who might be at increased risk of autism from MMR vaccination.

To examine further a possible relationship between MMR vaccine and autism, including in different subgroups of children, we conducted a large

case-control study in metropolitan Atlanta in which we compared the MMR vaccination histories of a population-based sample of children with autism and school-matched control children who did not have autism.

METHODS

Study Population

Children with autism were identified from the Metropolitan Atlanta Developmental Disabilities Surveillance Program (MADDSP), a multiple-source, population-based surveillance program that monitors the occurrence of selected developmental disabilities among children in the 5-county metropolitan Atlanta area.[5,26] In 1996, the first year in which autism was included, MADDSP identified 987 children 3 to 10 years of age with autism, for a prevalence of 3.4 per 1000 children.[5] The autism cases were identified through screening and abstraction of source files at schools, hospitals, clinics, and specialty providers. Clinical psychologists with expertise in the diagnosis of autism reviewed the abstracted records according to a standardized coding scheme to determine the presence of behavioral characteristics consistent with the *Diagnostic and Statistical Manual of Mental Disorders, 4th edition* (DSM-IV)[1] criteria for autism spectrum disorders (ASDs). The study was approved by the Centers for Disease Control and Prevention's institutional review board. Because the activity was considered public health surveillance, parental consent was not required. Instead, permission to access records was obtained from each data source.

For the current study, case children were derived from the 987 children who were originally identified in the 1996 MADDSP prevalence year. During the period from 1999 through 2001, we were able to locate school records with the required immunization documents for 660 case children. We were not able to find school immunization records for the remaining children because the children had moved out of state, transferred to a school in a county that was not under MADDSP's jurisdiction, transferred to a private school that was not accessible by MADDSP, or were being home schooled. When a child moved or transferred, the child's permanent school record, including immunization form, was transferred to the child's new school. We were not able to quantify how many children were lost for each of these reasons because of incomplete record keeping at the schools. An additional 17 case children were excluded from the study because we could not identify matched control children for them.

We attempted to match 3 control children to each case child and were successful for 97% of the case children; the remaining case children had fewer matched control children. Control children were selected from regular education programs and were matched to case children based on age in 1996 (within 1 year), gender, and school of attendance at the time of abstraction. However, when a case child was attending a psychoeducational school, a special school for children with behavioral and developmental difficulties, control children were selected from the school in the child's residential area that the child would have attended had the child not had a disability. In addition, when a case child was in the last elementary grade level before middle school and was older than other children in his or her grade level, control children were selected from the middle school that the case child normally would have attended.

We excluded case and control children from the study when they were missing a vaccination form (15 case children and 14 control children). We also excluded children with incomplete vaccination forms when the form did not list at least 1 diphtheria-tetanus-pertussis vaccine by 2 years of age or at least 1 MMR vaccination at any age (4 case children and 1 control child). Children with a religious or medical exemption (1 case and 1 control) were not excluded from the study. After all exclusions, 624 case and 1824 control children remained in the study.

Classification of Autism Subgroups

The MADDSP data files were reviewed by a developmental pediatrician (M.Y.A.) to identify subgroups of children with potentially different susceptibilities to development of autism from an environmental exposure, such as MMR vaccine. These groups, which were not mutually exclusive, included 1) children without any indication of developmental delay before 12 months of age (ie, before the recommended age of the first MMR vaccination) or a preexisting condition, 2) children with any indication of loss of age-appropriate developmental skills (regression) or appropriate skills that failed to progress (plateau), and 3) children with and children without coexisting mental retardation (MR). Children without any indication of developmental delay at <1 year of age were children who did not lack any speech at appropriate ages, including cooing and babbling, and were socially responsive in the first year of life (eg, cuddling, appropriate eye contact, responding to parents voices). Children without a preexisting condition included children who did not have a major birth defect, a co-occurring developmental disability, or a major perinatal or postnatal insult (eg, infection, injury) that could have contributed to developmental delays. Children without a preexisting condition and without evidence of delay before 1 year of age were grouped into a single category. MR was defined as an IQ of 70 or less on the most recent psychometric test. We also attempted to examine information on family history of autism spectrum conditions or other developmental disabilities, but this information was incomplete in the records and not useful for analysis.

Vaccination History

Trained abstractors collected vaccination histories for both case and control children from the standardized state immunization forms that are required for all children who attend school and early intervention programs in Georgia. The forms are placed in each student's permanent school file that is kept at the school where the child is enrolled. During the period in which children in our study would have enrolled in school, Georgia law required at least 1 dose of measles, mumps, and rubella vaccines, usually administered at 15 months of age as the combined MMR vaccine. Vaccination was also required for enrollment in preschool special education programs for 3- to 5-year-old children with disabilities.

Other Data Collection

For children with autism, additional developmental disability–related information was obtained from MADDSP data files. This included information on the presence of other developmental disabilities, epilepsy, and IQ level (for categorization of MR). In addition, we identified major birth defects among the case children by matching with Centers for Disease Control and Prevention's Metropolitan Atlanta Congenital Defects Program, a population-based surveillance program of major birth defects that covers the same geographic area.[27]

For all case and control children, we obtained demographic information, including date of birth, gender, race, and birth state, from the birth certificate or registration form that is kept in each child's permanent school record. We matched 355 (56%) case and 1020 (56%) control children to Georgia state birth certificate records, which allowed us to obtain additional information, such as each child's birth weight and gestational age and the mother's parity, age, race, and education.

Statistical Analyses

Determining exposure–disease associations requires knowledge of dates of exposure and onset of illness. Autism, however, usually does not have a well-demarcated date of onset. Other studies have tried to address the possible relationship to MMR vaccination by examining the temporal relationship between vaccination and onset of initial parental concern, date of first diagnosis of autism, or onset of regression (if present). We had incomplete information on these events, so we compared the distribution of ages at first MMR vaccination between case and control children. The assumption implicit in this exposure comparison is that if the MMR vaccine increases the risk of autism, which usually develops before 24 months of age, then children who are vaccinated at younger ages would have a higher risk of developing autism. The age at exposure was examined in a number of ways. First, we compared the overall distributions of age at vaccination. We then analyzed associations using 3 specific age cutoffs: 1) <18 months of age, as an indicator of "on-time" vaccination according to the recommended vaccination schedule for MMR vaccine[28]; 2) <24 months of age, the age by which atypical development has become apparent in most children with autism[23,29–32]; and 3) <36 months of age, the age by which autistic characteristics must have developed to meet DSM-IV criteria for autism.[1]

We used the χ^2 statistic for categorical comparisons of the

characteristics of case and control children. We compared the overall distributions of ages at first MMR vaccination using a likelihood ratio test in a conditional logistic regression model stratified by matched sets in which age at vaccination was included as a categorical variable with 5 age categories. We also used conditional logistic regression models to estimate the odds ratios (ORs) for the association between autism and age at MMR vaccination dichotomized according to the 3 prespecified age cutoffs (18 months, 24 months, and 36 months).

In the subgroup of children that we matched to birth certificate files, we were able to adjust for additional factors. Potential confounding variables were evaluated individually for their association with autism case status. Those with a $P < .20$ were included as covariables in conditional logistic regression models to estimate adjusted ORs.[33] In analyses stratified by birth or maternal characteristics, we were not able to maintain the matched sets in the analysis. However, we did include the matching factors (age, gender, and school) as covariables in the regression models.

RESULTS

Case Selection

The 624 case children included in the analysis and the 363 excluded case children were similar with respect to age and gender (Table 1). Although a somewhat larger proportion of included (60%) than excluded (56%) case children had evidence of MR, this difference was not statistically significant.

Clinical Features of Autism Cases

Among the 624 case children, 378 had MR, 31 had cerebral palsy, 8 had visual impairment, 7 had hearing loss, 49 had epilepsy, and 31 had congenital malformations. A total of 234 cases were identified with at least 1 preexisting condition (eg, congenital malformation, metabolic disorder, fetal alcohol syndrome, intraventricular hemorrhage) or indications of developmental delay before 1 year of age. On the basis of record review, we identified 80 case children with evidence of regression or plateau in developmental milestones after 12 months of age

Demographic Characteristics of Case Children and Matched Control Children

In the total sample, case and control children were matched appropriately on age and gender, with a preponderance of boys in both groups (Table 2). The racial distributions were also fairly similar, although a larger proportion of control (10%) than case (6%) children were classified as "other" race and both groups had an appreciable number for which race information was missing.

TABLE 1. Comparison of Demographic Characteristics and Cognitive Levels Between Included and Excluded Autism Case Children

Characteristic	Included Cases (N = 624)		Excluded Cases (N = 363)	
	n	%	n	%
Age group (y)				
3–5	214	34	131	36
6–10	410	66	232	64
Gender				
Male	500	80	292	80
Female	124	20	71	20
Mental retardation				
Yes	376	60	205	56
No	248	40	158	44

The similarities in age and gender were also observed in the 355 case and 1020 control children who were matched to the Georgia birth certificate files (Table 2). In this subsample, the racial distributions of case and control children were the same and no children had missing race data. Using data that were available only in the birth certificate files, we did find several differences between case and control children. Compared with control children, case children were significantly ($P < .05$) more likely to have had a low birth weight and to have been the product of a multiple-birth pregnancy. At the time of delivery, mothers of case children tended to be older and to have had higher levels of education.

Comparisons of Ages at MMR Vaccination

The overall distributions of ages at first MMR vaccination were similar ($P = .22$) for case and control children (Fig 1). Most case (70.5%) and control (67.5%) children were vaccinated between 12 and 17 months of age.

When we performed the analyses dichotomizing age at vaccination, we found that vaccination before 18 months or 24 months of age was not associated with case status, either overall or in the different gender or age subgroups (Table 3). Using a 36-month cutoff, more case children (93%) than control children (91%) were vaccinated before 36 months of age (OR: 1.49; 95% confidence interval [CI]: 1.04–2.14); the association was strongest in children 3-to-5 years of age (OR: 2.34; 95% CI: 0.99–5.54). Although the OR was higher among boys than among girls, the gender-specific ORs were not significantly different (likelihood ratio test P-value = 0.27 for the interaction of gender and age at vaccination <36 months).

In the analyses using the birth certificate subsample, we were able to adjust for potential confounding variables. All of the ORs were lower than those in the total sample, except those for the 3- to 5-year age group vaccinated before 24 months or before 36 months (Table 3). However, because of the smaller size of the birth certificate sample, the 95% CIs for all age categories were wider and included 1.0. Although the birth certificate sample results in Table 3 were adjusted for maternal and birth characteristics, the ORs were not different from unadjusted results for the birth certificate sample (data not shown), indicating that there was little to no confounding effect by these factors.

Results for Subgroups of Case Children

When we performed analyses within the nonmutually exclusive clinical subgroups of case children, we found no associations with vaccination before 18 months or 24 months of age among cases without preexisting conditions before 1 year of age, case children with regression or plateau, and case children with and without MR (Table 4). Using a 36-month age cutoff, the ORs in all subgroups of case children were above 1.0, but only the OR among case children without MR had a CI that excluded 1.0. None of the adjusted results using the birth certificate sample was statistically significant. In the birth certificate sample, however, only 3 case children without men-

TABLE 2. Characteristics of Cases and Control Subjects in the Total Sample and the Birth Certificate Sample

Variable Category	Total Sample				Birth Certificate Sample			
	Controls		Cases		Controls		Cases	
	n	%	*n*	%	*n*	%	*n*	%
Age (y) in 1996								
3–5	623	34	214	34	376	37	127	36
6–10	1201	66	410	66	644	63	228	64
Gender								
Male	1462	80	500	80	809	79	282	79
Female	362	20	124	20	211	21	73	21
Race								
White	918	50	333	53	571	56	199	56
Black	636	35	230	37	384	38	137	39
Other	174	10	40	6	65	6	19	5
Missing	96	5	21	3	0	0	0	0
Maternal age (y)								
<20					95	9	15	4
20–34					803	79	280	79
35+					122	12	60	17
Maternal education (y)								
≤12					466	46	135	38
13–15					253	25	100	28
16+					301	30	120	34
Birth weight (g)								
0–1499					11	1	12	3
1500–2499					52	5	37	10
2500+					957	94	306	86
Multiplicity								
Singleton					990	97	329	93
Twin+					30	3	26	7
Parity								
First born					452	44	149	42
Second or higher					560	55	204	57
Missing					8	1	2	1
Total	1824	100	624	100	1020	100	355	100

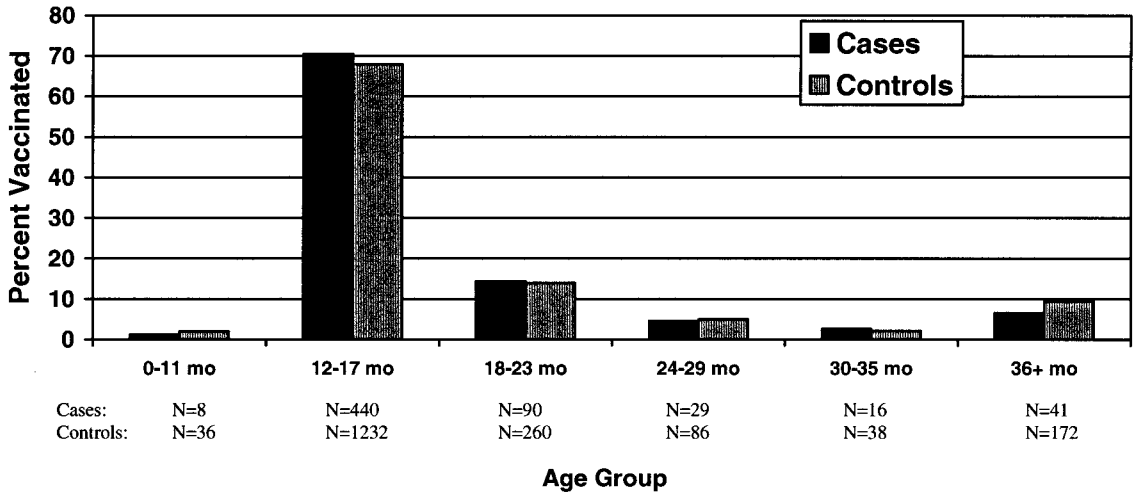

Fig 1. Age at first MMR vaccination by case status for total sample.

tal retardation were vaccinated after 36 months of age, resulting in a highly unstable OR estimate for this subgroup.

Results According to Race, Birth Weight, and Maternal Characteristics

We further examined associations according to selected maternal and birth characteristics that were available from the birth certificate files. For vaccination before 18 months or 24 months of age, all of the ORs according to different categories of race, birth weight, maternal age, and maternal education were <1.0 (Table 5). For the 36-month cutoff, there were suggestions of possible associations within the subgroups of children whose mothers were older or had more years of education, but the CIs were very wide and included 1.0.

DISCUSSION

In this population-based study in a large US metropolitan area, we found that the overall distribution of ages at first MMR vaccination among children

TABLE 3. Association Between Age at First MMR Vaccination and Autism Case Status for the Total Sample and the Birth Certificate Sample and According to Gender and Age

Sample	Case Subgroup	Cases	<18 Months, OR (95% CI)	<24 Months, OR (95% CI)	<36 Months, OR (95% CI)
Total sample	All cases	624	1.12 (0.91–1.38)	1.21 (0.93–1.57)	1.49 (1.04–2.14)
Unadjusted analyses*	Boys	500	1.22 (0.97–1.54)	1.29 (0.96–1.73)	1.67 (1.10–2.53)
	Girls	124	0.83 (0.52–1.30)	0.96 (0.55–1.68)	1.06 (0.51–2.20)
	Aged 3–5 y	214	1.08 (0.73–1.60)	1.66 (0.95–2.92)	2.34 (0.99–5.54)
	Aged 6–10 y	410	1.14 (0.90–1.46)	1.10 (0.82–1.49)	1.33 (0.89–1.98)
Birth certificate sample	All cases	311	0.93 (0.66–1.30)	0.99 (0.63–1.55)	1.23 (0.64–2.36)
Adjusted analyses†	Boys	243	0.94 (0.65–1.38)	1.01 (0.61–1.67)	1.64 (0.77–3.49)
	Girls	68	0.79 (0.33–1.86)	0.84 (0.26–2.77)	0.24 (0.04–1.47)
	Aged 3–5 y	112	0.77 (0.39–1.50)	1.67 (0.60–4.67)	2.63 (0.51–13.45)
	Aged 6–10 y	199	0.98 (0.65–1.47)	0.87 (0.51–1.46)	1.09 (0.52–2.30)

* Conditional logistic regression model stratified by the matching variables (age, gender, school).
† Conditional logistic regression model stratified by the matching variables (age, gender, school) and adjusted for birth weight, multiple gestation, maternal age, and maternal education. The number of cases (N = 311) is less than the number of cases with birth certificate data because some cases had no matched controls with birth certificate data.

TABLE 4. Associations Between Age at First MMR Vaccination and Autism Case Status Within Selected Clinical Subgroups of Cases for the Total Sample and the Birth Certificate Sample

Sample	Case Subgroup	Cases	<18 Months, OR (95% CI)	<24 Months, OR (95% CI)	<36 Months, OR (95% CI)
Total sample	No preexisting conditions <1 y‡	390	1.07 (0.83–1.39)	1.14 (0.82–1.59)	1.51 (0.96–2.37)
Unadjusted analyses*	Regression or plateau	80	1.37 (0.78–2.41)	1.30 (0.64–2.66)	1.45 (0.54–3.93)
	With MR§	376	1.06 (0.82–1.38)	1.09 (0.79–1.51)	1.21 (0.79–1.84)
	Without MR	248	1.23 (0.87–1.73)	1.46 (0.93–2.30)	2.45 (1.20–5.00)
Birth certificate sample	No Preexisting Conditions <1 y‡	187	1.05 (0.68–1.61)	1.02 (0.56–1.86)	1.82 (0.77–4.31)
Adjusted analyses†	Regression or Plateau	31	0.83 (0.23–3.09)	0.41 (0.07–2.29)	0.69 (0.14–3.30)
	With MR§	179	1.13 (0.72–1.79)	0.96 (0.54–1.71)	0.82 (0.38–1.79)
	Without MR	132	0.68 (0.40–1.16)	1.02 (0.47–2.22)	3.55 (0.74–17.07)

* Conditional logistic regression model stratified by the matching variables (age, gender, school).
† Conditional logistic regression model stratified by the matching variables (age, gender, school) and adjusted for birth weight, multiple gestation, maternal age, and maternal education.
‡ Includes children without any indication of developmental delay at <12 months, a major defect, co-occurring developmental disability, or a major perinatal or postnatal insult.
§ Defined as an IQ of ≤70 on the most recent psychometric test.

TABLE 5. Associations Between Age at First MMR Vaccination and Autism Case Status According to Race, Birth Weight, and Maternal Characteristics in the Birth Certificate Sample

Characteristic	Category	Cases	<18 Months, OR* (95% CI)	<24 Months, OR* (95% CI)	<36 Months, OR* (95% CI)
Race	White/other	218	0.87 (0.59–1.27)	0.77 (0.44–1.35)	0.89 (0.40–1.95)
	Black	137	0.83 (0.54–1.27)	0.98 (0.58–1.66)	1.68 (0.82–3.47)
Maternal age	<35 y	295	0.90 (0.67–1.22)	0.91 (0.61–1.35)	1.23 (0.71–2.11)
	35+ y	60	0.53 (0.24–1.17)	0.59 (0.16–2.23)	2.64 (0.22–31.72)
Maternal education	<16 y	235	0.94 (0.68–1.30)	0.94 (0.62–1.41)	1.18 (0.67–2.07)
	16+ y	120	0.60 (0.33–1.09)	0.61 (0.21–1.74)	2.76 (0.48–15.87)
Birth weight	<2500 g	49	0.50 (0.20–1.25)	0.48 (0.15–1.55)	1.41 (0.29–6.86)
	≥2500 g	306	0.91 (0.67–1.23)	0.93 (0.62–1.39)	1.26 (0.71–2.24)

* OR (95% CI) from unconditional logistic regression model adjusted for age, gender, school, and all factors listed in table.

with autism was similar to that of school-matched control children who did not have autism. Our hypothesis was that earlier age at vaccination, ie, before a possible critical time window for autism development, might be associated with an increased risk for autism. When we analyzed associations according to different age cutoffs, we found that similar proportions of case and control children had been vaccinated before 18 months or before 24 months of age. No significant associations for either of these age cutoffs were found for specific subgroups of case children, including children with some indication of regression or plateau in development, the group of most concern based on the clinical reports of Wakefield et al.[15] Vaccination before 36 months of age was more common among case children than control children, although only a small proportion of children in either group received their first MMR vaccination after 36 months of age.

We compared the distribution of ages at vaccination between case and control children because we lacked an unvaccinated comparison group and we had incomplete information for determining date of onset of autism. Determining onset of autism, however, is difficult even under the best of circumstances. In most instances, brain abnormalities associated with autism probably occur prenatally,[34–36] but parents might not become aware of their chil-

dren's problems until later in life, when communication delays and characteristic behaviors become apparent. Analyses of videotapes made of children before ASD diagnosis indicate that identifying onset of developmental problems is very difficult, especially retrospectively,[37,38] and that children who were reported as losing skills often had abnormal behaviors before the time when the loss was first noted.[32,39]

The US vaccination schedule recommends that the first dose of MMR vaccine be administered between 12 and 15 months of age.[28] Thus, our results for vaccination before 18 months of age evaluated possible increased risks of autism associated with vaccination by or shortly after the recommended age. Parental concerns about development or the first indications of atypical development usually occur before 24 months of age in children with autism,[23,30–32,40] and developmental regression, if it occurs, usually is noted between 12 and 24 months of age.[23,41–43] In Wakefield's case series, 10 of the 12 children had ASD and 9 (90%) of the ASD cases had atypical behaviors noted by 21 months of age.[15] Thus, we would expect that exposures that could be causally associated with autism would most likely occur before 24 months of age.

To meet DSM-IV criteria for autism, some manifestation of atypical development must be apparent before 36 months of age.[1] Of the 41 case children who were vaccinated after 36 months of age in our study, 32 (78%) had documented delays in development before 36 months of age. Rather than representing causal relationships, associations with the 36-month cutoff would be more likely than associations with earlier age cutoffs to have been influenced by factors related to the evaluation, management, and treatment of the child. For example, case children might have been more likely than control children to have been vaccinated as a requirement for enrollment in early intervention or preschool special education programs. This possibility is supported by the finding that the difference between case and control children in the proportion vaccinated before 36 months of age was strongest in the 3- to 5-year-old age group. In 1991, the Individuals with Disabilities Education Act[11] mandated the provision of special education programs for children with autism beginning at approximately 36 months of age. Thus, the case children who were 3 to 5 years of age in 1996 would have been most affected by the Individuals with Disabilities Education Act special education requirement and 98% of these children had been enrolled in preschool special education programs.

In addition to being a large, population-based study, our study had a number of other strengths. We included a detailed review of case records by a panel of autism experts to confirm the case definition for autism according to DSM IV criteria. We were able to obtain additional clinical information that allowed us to evaluate associations within subgroups of case children according to developmental course (eg, regression) or presence of other coexisting conditions (eg, MR). We ascertained vaccination histories from standard immunization forms, eliminating possible recall bias. Information bias was further reduced by the fact that the clinical and behavioral data and the vaccination data came from independent record sources and the information on both exposure and outcome was recorded before the publicity about a possible association between MMR and autism. Furthermore, by linking with birth records, we were able to evaluate and control for potential confounding by demographic and birth characteristics.

Although the original group of 987 autism case children identified by MADDSP in 1996 probably was a fairly complete enumeration of cases in metropolitan Atlanta, we were able to locate vaccination records for only approximately two thirds of these children during 1999 through 2001. This is primarily because when a child moved or changed schools, the permanent school record was transferred to the child's new school and we did not have access to records for children who were no longer attending a school in a metropolitan Atlanta public school district that participates in MADDSP. Thus, factors related to moving or changing schools might have influenced our results. However, we did not find any significant differences in demographic characteristics or cognitive level between case children who were included and those who were excluded from the study.

Among case and control children whose records we were able to match with Georgia birth certificate files, we performed a subanalysis to evaluate possible confounding by differences in birth and maternal characteristics. For the most part, the results were not greatly different from those in the total sample. The differences that were noted were predominantly of lower ORs in the birth certificate sample. These differences seemed to be primarily a result of restricting the analysis to children who were born in Georgia and could be matched to a state birth certificate and not to confounding by maternal or birth characteristics. Thus, the differences between the 2 samples could represent random fluctuation or a possible bias related to being born outside Georgia.

A number of other epidemiologic studies have failed to find an association between MMR vaccination and autism.[19–24] A recent retrospective cohort study from Denmark is particularly persuasive.[24] The study contained data on more than half a million Danish children, including nearly 100 000 who had not been vaccinated with MMR. Through linkages of various national registries and medical databases, the study found that the relative risk associated with MMR was 0.92 (0.68–1.24) for autistic disorder and 0.83 (0.65–1.07) for other ASDs. An Immunization Safety Review Committee of the IOM[25] reviewed the epidemiologic and other evidence on MMR vaccine and risk for ASDs and concluded that the evidence favors rejection of a causal relationship at the population level. Other review panels have reached similar conclusions.[44,45] The IOM committee, however, did recommend additional studies to evaluate potential high-risk subgroups of children.

The caveat by IOM relates primarily to "autistic enterocolitis," which has been proposed by Wakefield and colleagues[16,18] to be a new clinical syn-

drome that is associated with MMR vaccination as supported by laboratory evidence of persistent measles virus infection in the intestines of affected children. The syndrome is characterized by developmental regression along with gastrointestinal disturbances. We were not able to evaluate the syndrome because we lacked information on gastrointestinal symptoms, but we did not find an association between age at vaccination, most notably by 18 months or 24 months, and autistic regression. We found a lower proportion of cases with regression, however, than has been reported in other studies.[40,46] Our number of regression cases is likely to be an underestimation because we relied on abstracted information rather than interview with the parent and we may not have captured all of the behavioral information needed to determine whether the child had regression. Analyses by other investigators have found no support for a new variant of autism[40,46] or for the association of the MMR vaccination with regressive autism[23] or gastrointestinal disorders.[47]

In addition to regression, we evaluated other clinical subtypes of ASDs, including case children with and without MR, and case children who did not have congenital malformations or early evidence of developmental problems (and thus were at risk for onset of developmental disabilities at the recommended age for MMR vaccination). We generally did not find increased risks for any of these case subtypes associated with MMR vaccination at any age. The only exception was that case children without MR were more likely to have been vaccinated before 36 months of age than their matched control children.

Other concerns have been raised about vaccinations and autism, especially about thimerosal, the mercury-containing preservative that until recently had been included in multidose preparations of certain vaccines.[25] In the present study, we were not able to evaluate the potential association between thimerosal exposure and autism. The routinely recommended infant vaccines that used to contain thimerosal were diphtheria-tetanus-pertussis, hepatitis B, and *Haemophilus influenzae* type b. Hepatitis B and *Haemophilus influenzae* type b vaccines, however, were not required for school attendance during the period of our study, and they were incompletely recorded in the school records. MMR vaccine has never contained thimerosal. Single-antigen measles vaccine has been hypothesized to be safer than MMR,[48] but we had too few children who received measles vaccine alone to be able to evaluate this possibility. We performed an analysis in which we evaluated associations with any measles-containing vaccine; the results were similar to those for MMR vaccine (data not shown). We did not evaluate associations with the second dose of MMR vaccine because it is usually administered between 4 and 6 years of age, which is after the 36-month age limit for autism onset as defined by the DSM-IV.[1]

CONCLUSION

From a large population-based case-control study that included a well-defined case group and a comparison group of children selected from the same community, we found that, overall, the age at time of first MMR administration was similar among case and control children. Case children, especially those 3 to 5 years of age, were more likely than control children to have been vaccinated before 36 months of age. A majority of case children who were vaccinated after 36 months of age, however, had indications of developmental problems before 36 months of age. The difference in vaccination coverage by 36 months of age between case and control children is likely to be an artifact of immunization requirements for preschool special education attendance in case children.

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DISAPPOINTING RESULTS

"Lack of a measurable analgesic effect and absence of a beneficial effect on poor neonatal outcome do not support the routine use of morphine infusions as a standard of care in preterm infants who have received ventilatory support. Follow-up is needed to evaluate the long-term effects of morphine infusions on the neurobehavioral outcomes of prematurity."

Simons SHP et al. Routine morphine infusion in preterm newborns who received ventilatory support. *J Am Med Assoc*. November 12, 2003

Submitted by Student

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The analysis of the CDC report by Dr. Brian Hooker

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RESEARCH Open Access

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

Brian S Hooker

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 effectof 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=0.0019), respectively. Additionally, African American males showed an odds ratio of 1.73 (p=0.0200) for autism cases in children receiving their first MMR vaccine prior to 24 months of age versus 24 months of age and thereafter.

Conclusions: The present study provides new epidemiologic evidence showing that African American males receiving the MMR vaccine prior to 24 months of age or 36 months of age are more likely to receive an autism diagnosis.

Keywords: Autism, Measles-mumps-rubella (MMR) vaccine

Background

Autism is defined by persistent deficits in social communication and social interaction across multiple contexts and restricted, repetitive patterns of behavior, interests, or activities [1]. Autism incidence has risen dramatically over the past two decades [2] and it has recently been reported that one in sixty-eight children have this disorder [3]. In addition to these core deficits, autism has also been characterized by many other comorbid conditions including gastrointestinal issues, sleep issues, eating disorders and sensory processing issues [4].

It has been estimated that as many as 62% of children with autism experience a period of regression during early childhood, characterized by loss of previously acquired skills [5]. This period has been reported as ranging between 6 and 36 months of age with the typical age of regression between 18 and 24 months [6]. This period of regression occurs within the same time period that children in the United States typically receive their required vaccinations and thus there have been many studies regarding the incidence of autism and the receipt

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of specific vaccines. One of the primary concerns has been the timing of the administration of the first measles-mumps-rubella (MMR) vaccine.

The relationship between the MMR vaccine and autism was first hypothesized by Wakefield et al. [7] in 1999 after the observation of a regressive phenotype of autism that appeared in general after the administration of the first MMR vaccine. Although several studies have affirmed such a relationship between the MMR vaccine and neurodevelopmental disorders including autism [8,9], many other studies purport no statistical relationship between the MMR vaccine and autism incidence. The latter studies have been performed using cohorts from Denmark [10], Japan [11] and Poland [12], as well as the MMR vaccine and pervasive developmental disorder in Canada [13]. In addition, in 2004, Destefano et al. [14] published a paper describing a case–control study completed on children, in metropolitan Atlanta, who had been born between 1986 and 1993. Within this study, the age at the first MMR vaccine was assessed as a factor in the incidence of autism. Using conditional logistic regression, with first MMR age as the independent variable and autism incidence as the dependent variable, the study authors assessed relative risk for obtaining an autism diagnosis for those children receiving the first MMR vaccine before and after 18 months, 24 months and 36 months of age. Destefano et al. [14] found a statistically significant relative risk of 1.49 (95% confidence interval [CI]: 1.04 – 2.14) at the 36 month cut-off (i.e., in a comparison of children receiving the MMR before versus after 36 months). Rather than concluding that the first MMR vaccine could be playing a causal role in autism in these children, the study authors instead attributed the increased risk to greater numbers of autistic children receiving timely vaccinations in order to participate in State of Georgia special education services.

In this paper, we present the results of a cohort study using the same data from the Destefano et al. [14] analysis. The focus of the current study is differences in results in specific gender and race groups.

Methods

Cohort data

Cohort data were obtained directly as a "restricted access data set" from the Centers for Disease Control and Prevention (CDC) via a Data Use Agreement. Data were deidentified by the CDC in accordance with Family Education Rights and Privacy Act (FERPA) and the Health Insurance Portability and Accountability Act (HIPAA) prior to receipt by the study authors. Use of the CDC specifically for the study described herein was approved by the Simpson University Institutional Review Board, in accordance with U.S. Federal regulations.

Study population

As reported by Destefano et al. [14] (CDC) in the original publication, "Children with autism were identified by the CDC from the Metropolitan Atlanta Developmental Disabilities Surveillance Program (MADDSP), a multiple-source, population-based surveillance program that monitors the occurrence of selected developmental disabilities among children in the 5-county metropolitan Atlanta area". And further, "Autism cases were identified via screening and abstraction of source files at schools, hospitals, clinics, and specialty providers". Of the cases identified, vaccination records were located for 660 children. Control children were chosen from "regular" education programs and were within the same age group and schools of attendance or neighboring school as cases. Children missing a vaccination form or with incomplete vaccination forms (where the forms did not list at least 1 diphtheria-tetanus-pertusussis vaccine by 2 years of age or at least 1 MMR vaccine at any age) were excluded from the study. Children with religious or medical exemptions were not excluded from the study. The listed exclusions yielded a cohort size of 624 cases and 1824 controls.

Vaccination histories

Vaccination records were abstracted as described previously [14] from standardized state immunization forms that are required for all children who attend school and early intervention programs in Georgia.

Demographic data

Demographic data including birthdate, gender and race were obtained for both case and control children via birth certificates or registration forms kept as a part of each child's permanent school record. Georgia state birth certificate information was used to further obtain each child's birthweight. Although actual birthweight data were not released by the CDC, case and control children were lumped into birthweight categories: under 1500 grams, between 1500 and 2500 grams and over 2500 grams. All individuals less than 3 years of age at the time of testing (1996) were excluded from the analysis.

Statistical analyses

The Pearson's chi -squared test contained in the SAS® software was utilized for current statistical analyses, and a two-sided p-value < 0.05 was considered statistically significant. This is in contrast to the original Destefano et al. [14] (CDC) study, where a case–control study design was used, where 3 control children were matched to each case child, and analyzed using conditional logistic regression dichotomized for the three age cut-offs at 18, 24 and 36 months. Pearson's chi-squared is, in general, a more conservative analysis and therefore chosen

Table 1 Fisher's exact analysis for the entire cohort

	Total cohort			Males only			Females only		
Age cut-off	Relative risk	95% CI	p-value	Relative risk	95% CI	p-value	Relative risk	95% CI	p-value
18 months	1.11	0.91-1.36	0.292	1.21	0.96-1.52	0.102	0.822	0.53-1.27	0.375
24 months	1.21	0.93-1.57	0.151	1.30	0.96-1.76	0.0826	0.936	0.54-1.62	0.812
36 months	1.49*	1.04-2.14	0.0289	1.69*	1.11-2.57	0.0138	0.996	0.49-2.04	0.992

*Result is statistically significant based on $p < 0.05$.

for the present study. However, our results were also confirmed using a conditional logistic regression design similar to the Destefano et al. [14] (CDC) study. In the present study, frequencies of cases were determined for first MMR ages of less than versus greater than 18 months, 24 months and 36 months in each separate analysis. When accounting for cases in the cohort that excluded low birth weight (<2500 g) African American children, it was necessary to report results at 31 months rather than 36 months in order to avoid reporting data from age categories or "cells" that possessed less than 5 individuals.

Results

Table 1 shows the relationship between MMR timing and autism incidence for the entire cohort. As can be observed, there is a statistically significant effect for the cohort at 36 months (RR = 1.49, 95% CI: 1.04-2.14, p = 0.0289). However, this result appears to be caused by a stronger relationship (RR = 1.69, 95% CI: 1.11-2.57, p = 0.0138) seen exclusively in boys. Girls did not show any relationship between autism and MMR timing at any age group studied.

When looking specifically at African American children (Table 2), the relationship between MMR timing and autism incidence became more profound (RR = 2.30, 95% CI: 1.25-4.22, p = 0.0060) at 36 months of age. Again, this result was exclusively found in boys who showed statistically significant effects at both 24 months (RR = 1.73, 95% CI: 1.09-2.77, p = 0.0200) and 36 months (RR = 3.36, 95% CI: 1.50-7.51, p = 0.0019) of age. This effect again was not seen in females.

Table 3 shows results for the entire cohort excluding African American children. As can be observed, there is no statistically significant effect for any of the subclasses in either gender or age cut-off for MMR uptake. This shows that the effect observed overall is due to the very strong "signal" seen exclusively in African American boys. In other words, the strong, statistically significant relationship between younger first MMR age and higher autism incidence in African American males may be skewing the results for larger, more general populations that include African American males (e.g., all boys and all African Americans) to show a "relationship" that is actually only in African American males.

Through investigating the cohort demographic data, it was found that there was a higher proportion of low birth weight African Americans compared to the entire cohort, specifically within the portion of the cohort that possessed a Georgia state birth certificate. The number of individuals with a birth weight under 2500 g for African Americans was 11.9% as compared to the total cohort at 8.66%. A final analysis was completed on African American children in the "birth certificate" cohort, excluding low birth weight individuals (Table 4). Results were obtained at 18 months, 24 months and 31 months, rather than 36 months, as there were insufficient cases (less than 5) at the 36 month mark to carry out the analysis. Even at 31 months, there were insufficient cases of African American females. Thus, these results are not included in the analysis. Even excluding low birth weigth individuals, a relationship was seen between first MMR age and autism incidence at 31 months for African American males (RR = 2.64, 95% CI: 1.08-6.46, p = 0.0280).

Discussion

The results show a strong relationship between child age at the administration of the first MMR and autism incidence exclusively for African American boys which could indicate a role of the vaccine in the etiology of autism within this population group. This particular analysis was not completed in the original Destefano et al.

Table 2 Fisher's exact analysis for African American children only

	Total cohort			Males only			Females only		
Age cut-off	Relative risk	95% CI	p-value	Relative risk	95% CI	p-value	Relative risk	95% CI	p-value
18 months	1.24	0.90-1.70	0.184	1.36	0.95-1.95	0.0880	0.855	0.44-1.68	0.649
24 months	1.47	0.99-2.19	0.0562	1.73*	1.09-2.77	0.0200	0.861	0.40-1.88	0.707
36 months	2.30*	1.25-4.22	0.0060	3.36*	1.50-7.51	0.0019	1.01	0.38-2.68	0.982

*Result is statistically significant based on $p < 0.05$.

Table 3 Fisher's exact analysis excluding African American children

	Total cohort			Males only			Females only		
Age cut-off	Relative risk	95% CI	p-value	Relative risk	95% CI	p-value	Relative risk	95% CI	p-value
18 months	1.06	0.81-1.38	0.668	1.17	0.87-1.58	0.309	0.734	0.41-1.31	0.292
24 months	1.06	0.75-1.50	0.745	1.10	0.74-1.62	0.642	0.910	0.41-2.00	0.814
36 months	1.13	0.72-1.78	0.588	1.19	0.72-1.97	0.490	0.835	0.28-2.48	0.745

[14] (CDC) study. Although the previous study considered MMR timing and African Americans in general, no statistically significant effect was observed. This is in contrast to our result for African Americans in general, because the CDC study limited the total African American cohort to include only those individuals who possessed a valid State of Georgia birth certificate which decreased the statistical power of their analysis. Although a statistically significant relationship between first MMR age and autism incidence was seen in the general (all races) population within the earlier Destefano et al. [14] study, the coauthors interpreted this result as an artifact of "healthcare seeking behavior" citing that autistic children would receive their vaccines earlier in order to enroll in State of Georgia early intervention programs. However, it is highly unlikely that this type of behavior would be seen exclusively in African American males and thus, alternative hypotheses must be explored, including the possibility that the MMR vaccine may be causally linked to autism in African American males.

It should be noted that a recent publication has shown that the prevalence of autism in African Americans is nearly 25% higher than that of whites [15]. This value was obtained when CDC data were appropriately analyzed based on socioeconomic status. This could be due to issues regarding vitamin D status with African Americans as it has been estimated that vitamin D sufficiency among whites is between 30-60% but is only 5-10% among African Americans [16]. Patrick et al. [17] have very recently proposed a mechanism for the link between vitamin D status and autism via selective production of serotonin in the brain. Disruption of the serotonergic system is a very consistent observation with autism [18] as serotonin promotes prosocial behavior and proper assessment of emotional social cues [19].

Vitamin D has a multitude of other physiological functions in vivo. Vitamin D receptor has been found in many different tissues including the small intestine, colon, osteoblasts, activated T and B lymphocytes, islet cells and most organs in the body [20]. Vitamin D has also been implicated in many important physiological processing including modulation of activated T and B lymphocyte function [21,22] and prevention of inflammatory bowel disease [23]. Lower vitamin D status African American females are more susceptible to lupus [24]. Also, Epstein-Barr Virus antibody titers are significantly higher in African American youth as compared to compared to white youth [25] which may be a consequence of vitamin D insufficiency. Also, childhood adversity, which could be more prevalent in African American boys, can have lasting immune consequences [26].

Gallagher et al. [27] have reported previously regarding the Hepatitis B vaccine and autism in neonates, specifically within the 1997 to 2002 time period when this vaccine series still contained thimerosal. Regarding non-whites they specifically stated in the abstract, "Non-white boys bore greater risk" of receiving an autism diagnosis if they received the Hep B as neonates. The data reported in this paper show a statistically significant risk ratio of 5.53 ($p = 0.019$) for black boys as opposed to white boys who had a risk of 1.87 ($p = 0.171$) which was not statistically significant, when looking at autism in those infants that received their first Hep B vaccine during the first month of life.

A strength of the current study is that the MADDSP data were collected independently of the design used in the analysis. These data were collected as part of the diagnoses individuals received as part of their participation in special education program and as such, the healthcare providers in no way were thinking about the potential association between vaccine exposures and potential health outcomes. Also the current study controlled for a possible association between low birth weight individuals and autism as in the final analysis on

Table 4 Fisher's exact analysis for African American children excluding low birth weight

	Total cohort			Males only			Females only		
Age cut-off	Relative risk	95% CI	p-value	Relative risk	95% CI	p-value	Relative risk	95% CI	p-value
18 months	0.996	0.66-1.51	0.986	1.06	0.66-1.69	0.819	0.804	0.32-2.00	0.637
24 months	1.29	0.76-2.21	0.348	1.53	0.82-2.85	0.178	0.731	0.25-2.14	0.567
31 months*	1.85	0.91-3.79	0.0872	2.64	1.08-6.46	0.0280	—	—	—

*31 month cut-off was used as 36-months yielded results for African American males with <5 individuals per cell in the analysis.

the African American cohort, all children of birthweight less than 2500 grams were eliminated from the cohort. Although low birthweight (LBW) has been shown to be associated with an increased risk of autism [28], insufficient information existed within the study population to assess the effect of LBW on autism incidence or any interaction between LBW and MMR timing.

The weaknesses of the current study include the age groups selected for autism cases and controls within the original data set. The average age to receive an autism diagnosis has been reported (using the CDC's Vaccine Safety Datalink) as between 3.7 [29] and 4.2 years of age [30]. However, the CDC's dataset included controls as young as 3 years of age who could have been "too young" to receive an autism diagnosis. Accordingly, there is a greater than 50% probability that some of the controls could have later received an autism diagnoses, thus skewing the analysis to the null ("no effect") hypothesis. However, when the analysis was recompleted using controls that were six years of age or older, very similar results were obtained (data not shown). Also, information on the timing of other infant vaccines was not released by the CDC and thus it was impossible to control this factor in the current analysis. In addition, socioeconomic factors were not assessed in the current analysis. Thus, any differences in "healthcare seeking behavior" among individuals vaccinated ontime versus late could not be assessed.

Conclusions

The present study provides new evidence of a statistically significant relationship between the timing of the first MMR vaccine and autism incidence in African American males. Using a straight-forward, Pearson's chi-squared analysis on the cohort used in the Destefano et al. [14] (CDC) study, timing of the first MMR vaccine before and after 24 months of age and 36 months of age showed relative risks for autism diagnoses of 1.73 and 3.36, respectively. Future studies should be completed to further evaluate the relationship of first MMR timing and neurodevelopmental maladies, including autism, especially in underserved populations.

Routine childhood vaccination is considered an important public health tool in reducing the morbidity and mortality associated with infectious diseases. However, consideration should be made in the current United States vaccination schedule for genetic subpopulations that may be associated with vaccine adverse events. Additional research is required to better understand the relationship between MMR exposure and autism in African American males.

Abbreviations

CDC: Centers for Disease Control and Prevention; CI: Confidence Interval; Hep B: Hepatitis B vaccine; MADDSP: Metropolitan Atlanta Developmental Disabilities Surveillance Program; MMR: measles-mumps-rubella vaccine; RR: Relative Risk.

Competing interests

Dr. Hooker has been involved in vaccine/biologic litigation.

Authors' contributions

BH was the main manuscript writer and computer programmer.

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How Many African-American Children Have Been Harmed by CDC Fraud?

Add a Comment[Author: Marcella Category: Vax Facts]

If you haven't heard by now about the biggest news to hit the autism community in a long time, here's what's been happening:

- Dr. Brian Hooker reanalyzed the CDC's data and found a statistically significant increase in the risk of autism for children who received the MMR vaccine before 36 months of age. [1]
- The increased risk was strongest for African-American males, who were 3.4 TIMES more likely to develop autism when vaccinated with MMR prior to 36 months, compared to matched controls. [1]
- There was an increased risk of autism seen across the board for children who received the MMR vaccine prior to 36 months of age. [1]
- Dr. Hooker was alerted to this problem by one of the CDC scientists involved in a 2004 study which declared there was no risk of autism based on MMR vaccination prior to 36 months of age. The CDC scientist in question (Dr. William Thompson) is listed as one of the authors on the 2004 paper. Dr. Thompson is now referred to as "the CDC whistleblower." Dr. Thompson revealed to Dr. Hooker that the CDC researchers knew as early as 2001 about the greatly increased risk to African-American male children, and they intentionally covered it up. [2]
- The CDC has released a statement in which they do not deny the increased risk of autism for African-American males vaccinated with the first MMR prior to 36 months of age. [3]
- In the CDC's statement, they basically rationalize the increased incidence by attributing it to a rush on the part of parents of children with autism to vaccinate their children in order to enroll them in special education preschools. In other words, it's just a coincidence. A claim, by the way, that isn't the least bit credible. African-American children to this day are diagnosed later than the current average age of diagnosis, which is four, and receive fewer services such as special education preschools. How is it credible then that, back in 2004, there was a mad rush to vaccinate African-American boys by three for special education preschools?

Dr. Hooker's analysis of the data revealed a Relative Risk (RR) of 3.36 for African-American Males. The level of Relative Risk was statistically significant at p=0.0019, which means the probability of Dr. Hooker's findings being by chance was approximately 1 in 1,000.

In research, "p" means probability. When something is "statistically significant" it means a certain level of probability has been demonstrated when the data is analyzed. A p-value of .05 is necessary to consider whether the results are meaningful, or "statistically significant." A probability of .05 means that you have achieved a 95% assurance that what you are seeing is real and not by chance. A 1 in 1,000 level translates to 999% assurance that what you're seeing is real and not by chance.

The reanalysis of the data is important because in 2004, a group of researchers from the CDC published a study using the same data, and in their paper, they claimed there was no statistical significance between children with autism and controls (children without autism) based on the timing of the administration of the MMR vaccine. This was a lie. (I know. You're shocked.)

When it comes to lies about vaccines and autism, the CDC is very good at what they do. Lying liars that lie. As Dr. Hooker stated so eloquently in his interview with Teri Arranga on VoiceAmerica, "They lied before. Now they're lying about lying. Where else have they lied?" [5]

And therein lies (pun intended) the real scope of this issue. Where else have they lied, and just how big are the implications of those lies?

How big is this problem?

The 2004 study in question has been cited in 91 additional studies currently listed among the peer-reviewed medical literature on PubMed. Many of the studies in the peer-reviewed literature concerning vaccines, vaccine safety, and the relationship of vaccines and the autism epidemic have been authored by the same researchers involved in the fraudulent 2004 study. The scope of this is enormous. It's not just one study – this brings into question the validity of the entire body of research on the subject. That body of research is what families, medical professionals and policy-makers rely on when making decisions for the health of individual children and recommendations for vaccine policy — things like what vaccines get added to the childhood schedule, and what vaccines are going to be "mandated" for school attendance. That body of research also influences the decisions made for children across the globe. This is not just about one study, and it's not just about African-American children in Atlanta.

There are a lot of things to discuss about Dr. Hooker's findings. The first thing is that his findings are not different from the findings of the CDC scientists. That's right. No difference. The CDC researchers ALSO found that "Children with autism were more likely to be vaccinated before 36 months of age compared to matched controls." This information was related to the Institute of Medicine (IOM) in 2004, by Dr. Frank DeStefano, in his presentation about the results of the study. [6] (See slides 35 and 39 of the presentation.)

Is that confusing to you? It is to me. The principal author of the DeStefano et al. 2004 study told the IOM that children who received MMR vaccine prior to 36 months of age were more likely to receive an autism diagnosis than were their peers who did not receive the MMR vaccine prior to 36 months of age. Yet . . . when the final paper that reported the findings of their research was published in the journal Pediatrics, they left out that little tidbit of information.

So now you are up to date on what's been happening.

Let's go on . . .

With all of the coverage of this important revelation over the last several days, it is daunting for me to figure out what I can contribute that hasn't already been covered elsewhere. Some who know me have made the observation that I tend to be pretty good with research and with making things make sense for those who are not so well versed in statistics and experimental design. I am a nerd. I like numbers. I also have an insatiable curiosity about why certain things happen the way they do, and that fuels my need to pick things apart. Having said that, I am not perfect and like most people, I make mistakes.

Since this story broke, it has been stated many times (including by me) that the data indicates a 340% increase in the risk of autism for African American males. 340% is a huge increase. So is 236%, which is actually what we should have been saying. The numbers reported by Dr. Hooker were for Relative Risk. Basically, because the control population has a relative

risk of 1.0, the percent increase in risk for the case group is obtained by taking the Relative Risk for the case group (3.36) and subtracting the Relative Risk of the control group (1.0); in this instance, the percent increase for African-American males is 3.36-1.0, or 2.36, which translates to a 236 percent increased risk.

Confused yet? Take a deep breath. It gets better.

So . . . here it is. I'm sorry. We made a mistake. See, CDC? It's really not that hard to admit when you've made a mistake. Thankfully, this error did not go unaddressed for more than 10 years, and thankfully, no children were harmed as a result of our math mistake.

When I realized we had been using the wrong percent increase, I felt a bit ill. My thoughts went to something along the lines of, "Oh crap. We are going to look like a bunch of no-nothing alarmist parents and this is going to be used against us to say we don't know what we're talking about." Well . . . Why would that scare us? It certainly wouldn't be anything new.

As I thought more about this, it occurred to me that there are reasons why we would be so eager to believe the number was 340% – or even much higher. Those of us who have experienced vaccine-injury first-hand have lived a million percent increase in what we were led to expect would happen. We were told, "Vaccines are safe. There is no risk of autism from the MMR or any other vaccine."

As parents who were lied to, and who have watched our children's health be destroyed by vaccines we were told were "safe," we certainly may have finely tuned radars when it comes to detecting malicious intent from the CDC.

Many of us have been researching vaccines for a LONG time. We have read the science, and we know this is not an isolated event. Many of us are also living the consequences of the lies that have been perpetuated. As TMR's Zorro discussed in her blogpost earlier this week, the institutional gas-lighting and denial of our own observations and reports of our children's regression and chronic health problems by those who are supposed to protect our children's health re-traumatizes us on a regular basis. [7]

This is PTSD. It's trauma. It's the denial of what has happened to ALL of our children, which makes us have absolutely NO problem in seeing the increased danger to other people's children. This is what happens when researchers refuse to report the truth. If the truth of the damage is less than what we believe it to be, we are more likely to be able to accept that, if they would only acknowledge that there IS ANY AMOUNT of damage being done to our children.

Let's not lose sight of what really matters!

A 236% increase is still huge, and none of this changes the fact that the CDC cooked the data and buried the truth. Just as they have done repeatedly in the past, and just as they will continue to do if there is no Official Congressional Inquiry and if those responsible are not held accountable. We want the truth. Our children deserve at least that much.

So, now that the highlights have been covered, and now that the fessing-up is over with, what's left is to discuss what the numbers really mean, in terms of real children.

How many children are we talking about?

What does a 236% increased risk of autism mean for the population of African-American children? According to the website, stats.org, "A small increase in risk in a large population can result in many deaths" – or in this case, many more cases of autism. [8]

But, we aren't talking about a small increase. We're talking about a 236% increase for African-American males. Again . . . what does that mean? To figure that out, we need some (more!) statistics. The most recent stats we have on the rate of autism among American children comes from the CDC's ADDM data. [9]

I know. I can hear the groaning. Let's start with those numbers and break them down.

The 2014 ADDM report contains information for children who were 8 years old in 2010. The data was gathered from 11 sites in the U.S. I have written before about why the data is problematic, so I won't go into too much detail about that here. In a nutshell, the 1 in 68 number is a vast underestimate for the following reasons:

1. By the time the 1 in 68 number was announced, the children in question were 12 years old;
2. The 11 sites from which the data was gathered only included one state (New Jersey) in the top ten states with the highest autism rates, according to IDEA (educational) data;

According to the CDC's report, the 2014 ADDM data reveals a 13% yearly increase in the rate of autism, and this yearly increase has been consistent for the last several years. So, when we extrapolate the data down to children who are currently three years of age, a more accurate estimate of the autism rate in America (2014) is 1 in 21 three-year-olds, and 1 in 18 two-year-olds. Anyone who has been in a preschool class recently shouldn't have any problem believing that.

If we use the CDC's old, under-reported number of 1 in 68 for the entire U.S. population, that translates to a rate of 14.7 children with autism per 1,000, or 1,470 cases of autism per 100,000 American children.

The next thing we have to do is figure out how many African-American male children there are in the United States. The total number of children (birth to age 18 years) in the U.S. in 2013 was 73,585,872. African-American children comprise 14% of the total population of American children. It should be noted that the 14% number only includes those whose parents identify them as "Black Only," so the 14% number doesn't include children of mixed racial heritage. Okay. So the official number of "Black Only" children in the U.S. (2013) was 10,179,544. [10]

The ratio of black male children to black female children in the U.S. has been fairly consistent since the 1980s, and stands at around 1.03 to 1.0, meaning that for every 1,000 female black children born, there are 1,030 black male children born. [11]

My head is spinning at this point, so for the sake of my own remaining sanity, I'm going to simplify things and say that half of the total of black children born are boys.

- Total of African-American male children in the United States divided by 2:

  10,179,544/2 = 5,089,772 (African-American male children under the age of 18)

Hang in there. We're in the home stretch . . .

Okay. So if autism affects 1,470 of every 100,000 children, then a 236% increase (relative risk of 3.36) in autism results in 3,469 additional cases per 100,000 African-American male children. That's ADDITIONAL cases, so we have to add 1,470+3,469 and we get 4,939 cases of autism per 100,000 African-American male children.

With the total population of African-American male children at approximately 5 million, the total number of African-American male children with autism as a result of increased risk from timely MMR vaccination is estimated at 4,939 x 50 = 246,950 children. (100,000 x 50 = 5,000,000)

250,000 lives. 250,000 families.

At LEAST 250,000 African-American male children could have been spared if the CDC scientists had told the truth when the increased risk was first known to them in 2001. Please remember that this is the number of African-American male children who are CURRENTLY under the age of 18, and does not include any of the children who were over the age of five in 2001. Those victims of the CDC's deception are no longer considered children so they are not included in the 250,000 number.

Is this a racial issue? No doubt. Is it JUST a racial issue? No way.

What we know at this point is that the CDC buried the knowledge of a significant increase in the risk of developing autism for African-American male children who received the MMR vaccine according to the CDC's Recommended Childhood Vaccination Schedule. That one lie is responsible for at least 250,000 cases of autism in African-American male children. And

that number is a vast underestimate of the true extent of the damage.

What are the real numbers? My brain can't handle that today. My heart can't either.

African-American males are not just more likely to be diagnosed with autism as a result of the MMR vaccine. As those of us with our own vaccine-injured children know, there is an entire continuum of neurological and immune-system damage that can result from vaccines. While preparing this article, I did a little research on other issues facing African-American male children and the picture is not pretty. As one recent article reports, African-American children are far less likely to finish high school, far more likely to be suspended from school, and more likely to suffer language-based learning disabilities than their non-black peers. [12]

Are these other learning and behavioral difficulties among African-American male children also related to vaccine injury? It certainly seems likely. Of course, these are questions that could have been pursued 13 years ago if the CDC hadn't buried the information. As a result of the CDC's lies and fraud, we have no way of knowing how much vaccine injury factors into these (or other) issues that plague our country's young black males. It is certainly time to change that, and research investigating these issues should be funded and undertaken immediately.

Scientists whose salaries are funded with taxpayer money, and whose research is relied upon for decisions affecting the health of children, should be held to the highest standard of accountability.

The goal of scientific research is not to shut down inquiry. The goal of scientific research is to further inquiry. The shutting down of scientific inquiry by the CDC and other aspects of the government is not unique to the 2004 paper, and it is not unique to the MMR vaccine-autism link.

Covering up the evidence of a group of children who were at greatly increased risk of significant harm from the MMR not only denied African-American families the right to make informed decisions about their children's health care, it denied the scientific community the opportunity to design and carry out follow-up studies to find out WHY those children are at increased risk. The answers to those questions could have helped to uncover other groups of children in other areas of the country who may have similar risk factors, including factors that may not be specific to African-American males.

The fraudulent 2004 study identified one particular susceptibility group. If follow-up studies had been done, it is very possible that other susceptibility groups may have been identified.

Bingo. That's why they covered it up.

Does anyone remember Dr. Bernadine Healy? The former head of the National Institutes of Health? Yeah. That Bernadine Healy.

In a 2008 interview with Sharyl Attkisson, Dr. Healy stated:

> *This is the time when we do have the opportunity to understand whether or not there are **susceptible children**, perhaps genetically, perhaps they have a metabolic issue, mitochondrial disorder, immunological issue that makes them **more susceptible to vaccines**, plural, or to one particular vaccine, or to one component of vaccines, like mercury. So we now, in these times have to take another look at that hypothesis; not deny it. I think we have the tools today that we didn't have 10 years ago. That we didn't have 20 years ago . . . to try and tease that out and find out if there is indeed that **susceptible group**. Why is that important? A **susceptible group** does not mean that vaccines aren't good. What a **susceptible group** will tell us is that maybe there is a group of individuals or a group of children that shouldn't have a particular vaccine or shouldn't have vaccines on the same schedule. I do not believe that if we identified a **susceptibility group**, that if we identified a particular risk factor for vaccines; or if we found out that they should be spread out a little longer, I do not believe that the public would lose faith in vaccines . . . . It is the job of the public health community and of physicians to be out there and to say, "Yes, we can make it safer because we are able to say, this is a subset and we're going to deliver it in a way that we think is safer . . . ." I think the government or certain public health officials in the government have been too quick to dismiss the concerns of these families without studying the population that got sick . . . . The public health officials have been too quick to dismiss the hypothesis as irrational, without sufficient studies of causation. I think they have often been too quick to dismiss studies in the animal laboratory, either in mice, in primates, that do show some concerns with regard to certain vaccines and also to the mercury preservative in vaccines. **The government has said in a report by the Institute of Medicine . . . in a report in 2004, it basically said, "Do not pursue susceptibility groups. Don't look for those patients, those children who may be vulnerable."** I really take issue with that conclusion. The reason they didn't want to look for those **susceptibility groups** was because they were afraid that if they found them, however big or small they were, that that would scare the public away. First of all, I think the public's smarter than that; I think the public values vaccines, but more importantly I don't think you should ever turn your back on any scientific hypothesis because you're afraid of what it might show . . . If you read the 2004 report and converse with a few of my colleagues who believe this still to be the case, there is a completely expressed concern that they don't want to pursue a hypothesis because that hypothesis could be damaging to the public health community at large by scaring people. I don't believe the truth ever scares people and if it does have a certain edge to it, then that's the obligation of those who are delivering those facts to do it in a responsible way so you don't terrify the public. One never should shy away from science; one should never shy away from getting causality information in a setting in which you can test it. Populations do not test causality; they test associations. You have to go into the laboratory, and you have to do designed research studies, in animals. What we're seeing is in the bulk of the population vaccines are safe. Vaccines are safe. **But there may be the susceptible group. The fact that there is concern that you don't want to know that susceptible group is a real disappointment to me. If you know that susceptible group, you can save those children. If you turn your back on the notion that there's a susceptible group that means that you are . . . what can I say?*** [13]

Indeed.

[1] http://www.translationalneurodegeneration.com/content/3/1/16

[2] http://finance.yahoo.com/news/study-focus-autism-foundation-finds-133000584.html

[3] http://www.cdc.gov/vaccinesafety/Concerns/Autism/cdc2004pediatrics.html

[4] http://www.cdc.gov/vaccines/schedules/hcp/child-adolescent.html

[5] http://www.voiceamerica.com/episode/79945/dr-brian-hooker-on-mmr-study-statistics-with-marcella-piper-terry-and-candyce-estave

[6] http://iom.edu/~/media/Files/Activity%20Files/PublicHealth/ImmunizationSafety/DeStefanoslides.pdf

[7] http://thinkingmomsrevolution.com/stop-calling-us-crazy-autism-mmr-institutional-gaslighting/

[8] http://www.stats.org/faq_risk.htm

[9] http://www.cdc.gov/ncbddd/autism/states/comm_report_autism_2014.pdf

[10] http://tinyurl.com/novtbkx

[11] http://www.infoplease.com/ipa/A0005083.html

[12] http://sanfrancisco.cbslocal.com/2014/04/10/troubling-statistics-for-african-american-males-in-the-classroom/

[13] http://www.cbsnews.com/news/the-open-question-on-vaccines-and-autism/

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Tags: #CDCwhistleblower, African-American males, autism, Bernadine Healy, Brian Hooker, CDC Fraud, DeStefano, MMR vaccine, susceptible groups, vaccine injury, vaccine research, William Thompson

« No Shots, No School, NOT TRUE!! (unless you live in Mississippi or West Virginia)

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Uncensored magazine (ad below) is a great source of truth you won't find anywhere else, and I endorse them fully.

The Amish don't get autism . . . .
They also don't get vaccinated.

CDC BUSTED for Burying Vaccine Related Autism Link

NaturalNews did a report about an intercepted CDC e-mail which blew the lid off the vaccine autism scam, which proves the CDC covered up the vaccine autism link. **Sure enough, the report the CDC mail referred to got censored practically instantly after NaturalNews published it, but I have it here below.** Perhaps this will put pressure on the censors to make this available again.

The actual censored text NaturalNews no longer has a link to:

Translational Neurodegeneration 2014, 3:16 doi:10.1186/2047-9158-3-16

Correspondence: Brian S Hooker bhooker@simpsonu.edu

Published: 8 August 2014

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 effectof 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=0.0019), respectively. Additionally, African American males showed an odds ratio of 1.73 (p=0.0200) for autism cases in children receiving their first MMR vaccine prior to 24 months of age versus 24 months of age and thereafter.**

Conclusions

The present study provides new epidemiologic evidence showing that African American males receiving the MMR vaccine prior to 24 months of age or 36 months of age are more likely to receive an autism diagnosis.

Keywords: Autism; Measles-mumps-rubella (MMR) vaccine

The above has been replaced with the following:

Abstract (provisional)

This article has been removed from the public domain because of serious concerns about the validity of its conclusions. The journal and publisher believe that its continued availability may not be in the public interest. Definitive editorial action will be pending further investigation.

And MY RESPONSE TO THIS IS THE FOLLOWING:

NO MATTER WHAT the story, DO NOT get vaccinated, a new bioweapon is being distributed via vaccines

This report has been updated to address Google Book's posting of a 1971 release of the New Scientist, which has pictures of the phage below in it. To see this update Click here. Even if Google books is not disinfo in this case (which it very well could be because this topic is so important), the

Farganne's Newsfeed

August 2014

2014.08.19

Note: The feed has been intermittent owing to a health issue. Prayers are appreciated.

Obama's Army Manual: It's Cool To Shoot Peaceful Protesters

The Most Basic BASIC Computer

The Tyranny of the Nanny State, Where the Government Knows What's Best for You

CCHR Calls on the FDA to Pull Plug on Judge Rotenberg Center Electroshocking Kids—UN Calls Use of Electroshock as Punishment Akin to Torture

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.

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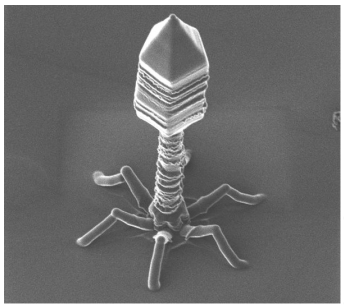
remainder of the phage report is BANG ON, phages are what Israel has chosen to use for the race specific bioweapon and because Google Books is not print, it does not satisfy the demand: SHOW ME ON PAPER WITH AN ORIGINAL RELEASE.

HERE IS THE CHALLENGE:



I challenge ANYONE, ANYONE AT ALL, to come up with a printed book from the 1990's that has the six legged T4 (proven Israeli Nanobot) bacteriophage in it, as pictured to the left. The web can be faked with ease AND THEREFORE GOOGLE BOOKS DOES NOT CUT IT. You cannot fake print. Let's see it ON PAPER, in unchangeable print from the 1990's. PRINT OR THIS THING CAME FROM AN ISRAELI LAB IN 2007, as I state and present compelling evidence for in the T4 nanobot report below.

There have been many reports about nanobots being developed that will destroy people. This report actually identifies that nanobot and what it is based upon. Once this nanobot is received via a tainted vaccine, it inserts DNA into your cells which instructs your own cells to produce more copies of itself and THAT is how it replicates. And it NEVER backs off, it simply orders your own cells to keep producing it until your cells die from being over worked doing exactly that. And it's completely verified this thing came from a lab in 2007, scroll down to the pictures if you don't want to read a lot.

Anti vaccine alternative news web sites are being taken down RIGHT NOW, with simultaneous total purges of the Google cache within hours and I beg to question why.

Actually, there is little to question. The answer is apparently obvious. The elite are now going for a huge push to get the T4 bacteriophage nanobot and other tainted vaccine additives put into the entire world public via mandated injections AT ONCE. **And I suspect they are going to use a phony Ebola outbreak to scare the people into accepting shots laced with T4 nanobots, with everyone receiving the shot within a short period of time.**

More so than flight370, Ukraine, and other issues, the takedown of anti vaccine web sites right in the middle of an "Ebola outbreak" is the coincidence we should all be paying attention to, THIS IS THE NEWS, if we miss this one we are likely to be destroyed.

Anyone who is with it enough to find a web site like this one ought to know about the NWO plan for global depopulation and the establishment of compact slave cities that can be managed with ease. What better way could there be to manage a massive depopulation than a fake outbreak, with the real disease being in mandated shots, peddled as vaccines that are supposed to protect? You can bet the elite do not want to actually release something that could kill them into the wild in the form of a real outbreak. They would instead opt to use all their ill gotten tax dollars to formulate a shot and inject it into their victims, with a certain percentage of the shots being non hazardous, perhaps 1 in 10, and the rest representing the end of life for the recipient. **If the disease is a managed disease that is completely non contageous and can only be received via a shot, they can rest easy while the world dies around them.**

And THIS is why they are pushing vaccines so hard, and now actively working to destroy completely legitimate dissent. I am certain that my web site is only staying online because it got too well known too quickly to take down without making waves, and I am going to use that advantage to warn the people and hope for the best.

THE EBOLA OUTBREAK IS LIKELY A HOAX TO TRICK YOU INTO GETTING A VIRAL NANOBOT LACED VACCINE THAT WILL DESTROY YOU

RED ALERT REPORT: CONFIRMED: VIRAL NANOBOTS A REALITY AND OUT IN THE WILD NOW

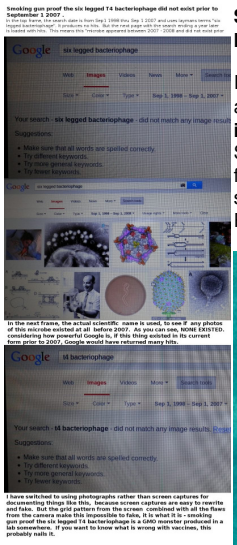
A NOTE TO THE SHILLS: What will happen if you end up with these things inside you? These are NOT Iphones, WANNA SHILL THIS? ARE YOU SURE YOUR ISRAELI LAB GOT THIS RIGHT AND THESE WILL NEVER GET INTO YOU?

With only 183K of super efficient DNA code, viral nanobots were released into the wild via vaccinations on September 22 2007 **and are being peddled as a natural variant of the T4 bacteriophage.** But this report PROVES THESE NANOBOT PHAGES ARE NOT NATURAL, AND WERE INSTEAD CREATED BY ISRAEL. These nanobots invade host organisms or cells and insert DNA that causes the host make more nanobots until the host organisms or cells die from overexertion producing them. **THESE ARE LIKELY TO BE IN THE PAPALOMA VACCINE, FLU SHOTS AND OTHER VACCINATIONS, VACCINES WILL BE THE DELIVERY MEDIUM THESE ARE DISTRIBUTED WITH. These are most likely in Gardasil, which in fact appears to be designed to destroy the feminine emotional centers and attack the brain, and this report proves it.**

If you are a headline skimmer who can't get past the first page of reading, you had better reconsider your information gathering habits and READ THIS IN FULL.

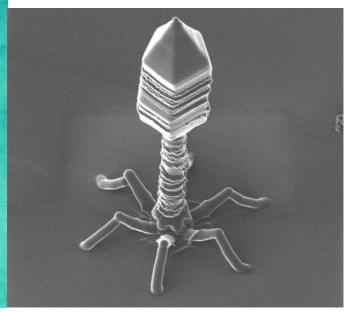
Brain destroying Genetically Modified six legged T4 bacteriophage is a NANOBOT

Vaccines being used for distribution RIGHT NOW



Something called a T-4 bacteriophage existed before, but it certainly did not look like this.

I knew the six legged T4 bacteriophage was NOT NATURAL and that Israel did it and I found a way to PROVE IT. **Click the image to the left to see how I proved it, this is NOT a hoax.** Google yields NO image results for T4 bacteriphage before September 1 of 2007, and TONS for September 1 of 2008. So that is the time frame this little six pointed demon was released into the wild. And if Google is subsequently rigged to screw with this, I already have it documented, this is REAL FOLKS.

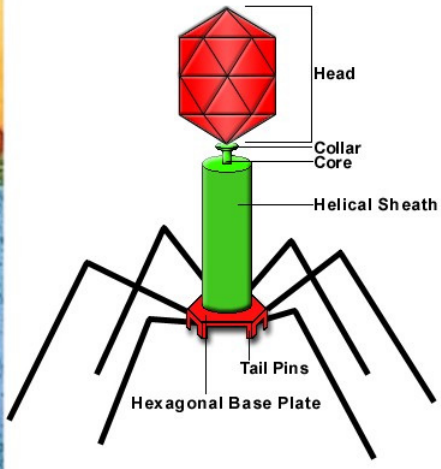


This is an emergency now, THIS is what Israel is going to use for their race warfare ethno-bomb, and the following earlier report by this web site explains EVERYTHING ON THIS TOPIC:

THIS is what Israel is going to use for their race warfare ethno-bomb.

The real threat to our future is the T4 nanobot Bacteriophage

An alarming development regarding the topic of viral phages has occurred



To provide a background on this, I have a really close friend who is a doctorate of pharmacology and an expert in the related microbiology fields. While having lengthy discussions about the future of weaponized medicine, this friend went on and on about how bacteriophages were being re engineered to attack our brain cells rather than their normal host - bacteria, implant DNA directly into our cells to change us immediately *and forever change future generations by delivering a DNA payload to the egg cells in the ovaries and also to the*

male reproductive system. This would have a permanent impact on the future of mankind. Once this type of phage was received via a vaccination, those vaccinated would have the vaccine induced traits passed along via DNA insertion by the phage to all future generations.

Though phages (which are viruses that attack bacteria,) of various types have been around virtually forever, they have thus far been harmless to anything other than bacteria, and are even highly selective in the exact type and species of bacteria they will attack.

When discussing this topic, I raised the question WHY were they modifying phages instead of common viruses that have a history of attacking people. One answer is in the fact that phages, more so than ordinary viruses which can cross the species divide, are highly selective in their targets and are programmed to only attack precisely what they were designed to - **a bacteriophage will prefer only one variant of a particular type of bacteria. For example, there are many different types of salmonella bacteria, and among salmonella bacteria, a particular phage will attack only one variant while leaving other variants of salmonella alone.** In the brain, not all neurons are identical, but all are similar so when administered via an intentionally tainted vaccine, **the high selectivity of a modified bacteriophage can be used to target precisely the type of neuron a sabotaged vaccine would be intended to wipe out.**

Another reason why bacteriophages were chosen as prime candidates for brain and DNA modification is the fact that they are not designed to attack people to begin with, so if any make it into the wild, re infection of people who never received the tainted vaccine would be impossible - a phage would not be likely to make it through the lungs or skin and into the blood stream simply because it was never designed to breach those biological barriers. But a needle, injecting it directly into the blood stream would bypass those barriers. So the elite, who would either want us emotionally numbed, dumbed down, or genetically altered would have little to fear while being amongst their victims, even as the disease raged inside them.

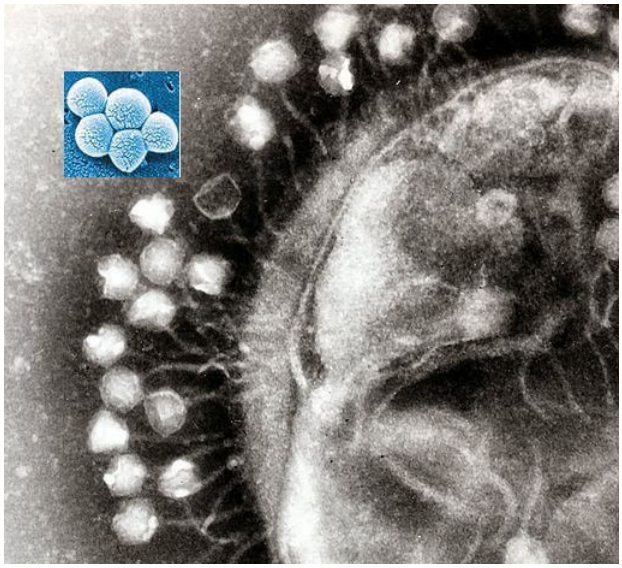
I cannot stress how freaked out my friends in the medical community were over this technology, one basically said it represented the end of mankind because it was in the hands of evil people, and that it would be used to divide humanity into two different groups - one which was rendered inferior by permanent DNA replacement, with the new DNA becoming a permanent part of what is passed on through the generations.

There are two modes of action phages operate with, one is the active assault, and one is a dormant mode. The active assault type of phage, called a lytic phage would be used for immediate personality modification of individuals, and the lysogenic type, which simply invades and makes changes to DNA while leaving whatever it is attacking alive, would be used for genetic modification of people, modifications that would span generations and be permanent.

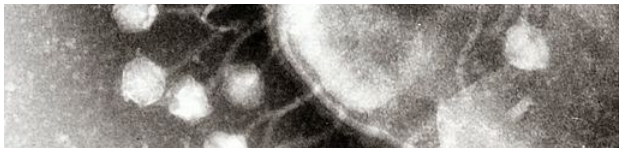
And now onto this spooky robot like six legged fully hexagonal T4 phage that now totally dominates the web - I would like to know why the people who are pulling this tainted vaccine scam off on the people have somehow made this particular variant so dominant in the public spectrum. So let me ask WHY is this thing almost completely dominant online, when MANY different types of phages exist and why no pictures of this thing were ever in Google images prior to September of 2007?

Let me take a WILD EYED GUESS. It´s a matter of national pride. A form of cult like religious orgasm. **All phages depicted now not only have six legs, but they also have a star of david body. This is NOT NATURAL, BLATANTLY OBVIOUS, AND DOWN RIGHT DANGEROUS. You know what the future holds now? It is something FAR MORE SPOOKY than any micro drone - it is the brain eating phage, specifically engineered to eat your emotional neurons and render you incapable of free will. I have been told (long ago, in 2010) it is being developed as a vaccine additive to be administered under strict controls and not be something that can survive outside the body, because that certain six pointed group of individuals has the same genetics as the rest of us, so they have no doubt made it certain that their own weapon cannot leap out of the wild and haunt them.**

Tainted Nightmare needs an update, because it only speaks about vaccine adjuvants. This entire phage thing is something new, four years advanced beyond that article. I suggest you take Alex with a grain of salt and watch this video, it really is dead on.



I suggest everyone save a copy of the photo to the left of a different type of natural phage, because through expungement of history "they" no doubt want to drool in a religious stupor over how their little hexagonal leg patterns and star of david phage bodies wreak havoc on the rest of mankind. And on that note, I may have stated above that the reason for re engineering a phage to do the job rather than a known infectious virus would be to make good and sure it could not spread to other people in the wild, but I can´t help but imagine that such a profoundly Jewish looking micro organism would not be selected simply for its appearances. That stupid phage has six points on the body when viewed from above, six points on the body when viewed from the side, and six legs. PERFECT,



DON´T YA KNOW!

. . . . . But I am sure it is just coincidence . . . . . .

.

.
.br>

The following discusses an OBVIOUS test run of this nanobot.

Doctors say "it´s like your brain is on fire"

READ THE FOLLOWING REPORT CLOSELY: It is OBVIOUS the Gardasil vaccine is not for Papaloma, it is for attacking the emotional centers, and the following report PROVES IT.

"PHILADELPHIA (CBS) – It's a mysterious, newly discovered disease that strikes mainly young women, and it's often misdiagnosed. Doctors who discovered it, here in Philadelphia, say it's like your brain is on fire.

It starts with personality changes, and then young women lay dazed, restrained in hospital beds, acting possessed and then become catatonic. They'd been so normal, when suddenly their lives went haywire.

"One minute I'd be sobbing, crying hysterically, and the next minute I'd be laughing, said Susannah Cahalan, of New Jersey.

My comment:

Personality changes? That is EXACTLY what will happen if your emotional centers, which largely control personality, get attacked. And HOW can doctors just blatantly state that "it´s like your brain is on fire" if they were not in on the program and had no insight into what was going on? Furthermore, IT STRIKES MAINLY YOUNG WOMEN, THE GROUP THAT WOULD GET THE GARDASIL VACCINE. They state later in this rag article that "It´s an autoimmune response, where the immune system is attacking the brain" but oh so responsibly omit the fact that it is blatantly obviously caused by vaccines administered to a controlled group, and that vaccines are responsible for virtually ALL auto immune disorders.

The fact that this is a controlled administration of an illness is proven by the fact that it is so selective to "young women", not middle aged women, teenagers, boys, children, men or anything else, just YOUNG WOMEN. YOUNG WOMEN GET THE GARDASIL VACCINE FREQUENTLY, WHICH IS VIRTUALLY BEYOND QUESTION, JUST BY WHO IS IMPACTED BY THIS ILLNESS, THE MEDIUM THAT CAUSED THIS "DISEASE" IN PHILADELPHIA. **Philadelphia no doubt got a custom batch.**

Further deepening the pile of B.S. in the CBS report is the fact that the doctors called it an auto immune disorder at all. There is no way they could know that for certain, unless they knew there was a trial vaccination campaign happening locally to Philadelphia, and they assumed it was auto immune. My guess? **My guess is this little six legged monster was being tested in a trial run, with a controlled group of the elite´s primary target - young women, to see how well it destroyed them. No doubt any woman who got these vaccines has it in her medical record, and they will use that record to see if "after complete recovery" from this illness she becomes the perfect wage slave they want her to be.** They will no doubt track EVERYTHING she does, from the number of abortions to how many days her children spend in daycare, and how well she follows the programming inserted into her life via various media control mechanisms. Obamacare will be PERFECT for that.

"I was very paranoid and manic. There was something wrong. I thought trucks were following me," said Emily Gavigan, of Pennsylvania.

And it got worse for Emily Gavigan, who was a sophomore at the University of Scranton. Hospitalized, and out of it, she couldn't control her arm movements. Then there were seizures, and she needed a ventilator. Her parents were watching their only child slip away.

"It was life and death for weeks," said Grace Gavigan, Emily's mom.

"We were losing her. This is something that I couldn't control," said Bill Gavigan, Emily's dad.

Doctors also couldn't figure out what was wrong with Susannah.

"I had bizarre abnormal movements, would leave my arms out extended, you know, in front of me. I was a relatively normal person, then the next minute I'm hallucinating and insisting that my father had kidnapped me," said Susannah.

Turns out, Susannah and Emily weren't mentally ill. They both had an auto immune disease called Anti-NMDA Receptor Encephalitis, when antibodies attack the brain, causing swelling.

My comment Cool name for it - "Anti-NMDA Receptor Encephalitis" and let me quickly explain what that means. **NMDA receptor encephalytis means swelling of NMDA receiving axons in the brain. Anti is spurious. It gives absolutely no indication of AUTOIMMUNE, that is B.S. The bottom line, from that terminology, is that something caused swelling of the nmda receptor sites.**

And now I got my weapon, to clear the BS with

Those doctors know exactly what caused this. Wanna know why? Because they said the NMDA receptors swelled up, and there is NO WAY YOU CAN KNOW THAT, UNLESS YOU DO BRAIN SURGERY AND REMOVE SOME OF THOSE RECEPTORS TO PUT THEM

ON A MICROSCOPE SLIDE AND CONFIRM THEY ARE INDEED SWOLLEN. Those doctors KNEW this was a test, and that it would CAUSE those receptors to swell up. They KNEW THERE WAS A BIOLOGICAL EXPERIMENT GOING ON, AND THEY WERE THE OBSERVERS, ABSENT A BRAIN BIOPSY THERE IS NO OTHER WAY FOR THEM TO SAY WHAT THEY DID, OTHER THAN FOREKNOWLEDGE OF WHAT WAS REALLY GOING ON. No biopsies were ever spoken of. Conveniently, the probable death part of those receptors was left out.

Anything regarding "doctors could not figure out BLAH" is smoke and mirrors, if they spat an answer too quickly someone might ask how they knew. And the fact that this subsided after a few weeks proves that it was NOT any sort of autoimmune malfunction as this article states, because autoimmune disorders do not go away in a few weeks. Something other than auto immune caused this. I believe this was a GM bacteriophage virus test, where the virus phages went in, did their job, and when complete those receptor sites were not transmitting random trash anymore because they were DEAD. END of symptoms. Dead is SILENT.

The fact that such obvious fallacious statements from the doctors made it into this CBS report without getting caught proves that CBS is not qualified to cover topics of this nature. Autoimmune disorders clearing up in a few weeks? YEAH RIGHT.

Susannah says this is how doctors explained it to her parents, "He told them her brain is on fire. He used those words: 'Her brain is on fire.'

If you did not watch this Alex video, I strongly suggest you do, it really is dead on.

You can see the original "brain on fire" article here, the one released before everyone parroted it. However, this CBS news site runs like garbage.