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[The Next Big Autism Bomb: Are 1 in 50 Kids Potentially At Risk?](#)

By David Kirby - 3-26-08

On Tuesday, March 11, a conference call was held between vaccine safety officials at the US Centers for Disease Control and Prevention, several leading experts in vaccine safety research, and executives from America's Health Insurance Plans, (the HMO trade association) to discuss childhood mitochondrial dysfunction and its potential link to autism and vaccines.

It was a sobering event for all concerned, and it could soon become known as the Conference Call heard 'round the world.

The teleconference was scheduled by a little known CDC agency called the Clinical Immunization Safety Assessment ([CISA](#)) Network, a consortium of six research centers working on "immunization-associated health risks," in conjunction with the CDC's Immunization Safety Office and the health insurance lobby -- whose companies cover some 200 million Americans.

The hot topic of the day was mitochondria - the little powerhouses within each cell that convert food and oxygen into energy for use by the body. Recent news events have implicated mitochondria in at least one case of regressive autism, following normal development.

Some researchers on the call reported that mitochondrial dysfunction is probably much more common than the current estimate of 1-in-4,000 people. The potential implications for autism, then, are staggering.

"We need to find out if there is credible evidence, theoretically, to support the idea that childhood mitochondrial dysfunction might regress into autism," one of the callers reportedly told participants.

"THE CLOCK IS TICKING"

One person on the call (those interviewed for this article asked to remain anonymous) told me that, "the CDC people were informed, in no uncertain terms, that they need to look into this issue immediately, and do something about it." The clock is ticking, they were told, and if they don't respond, the information will be made public.

Still, the doctor said, he was enormously impressed by the "seriousness" with which CDC officials treated the possibility of a link between mitochondria, autism and possibly vaccines as well.

In the recent landmark Hannah Poling case, filed in Federal "Vaccine Court," officials conceded that Hannah's underlying mitochondrial dysfunction was aggravated by her vaccines, leading to fever and an "immune stimulation that exceeded metabolic reserves."

But on March 6, CDC Director Dr. Julie Gerberding claimed that Hannah's case was a rare, virtually one-of-a-kind incident with little, if any relevance to the other 4,900 autism claims currently pending in the court -- or to any other case of autism for that matter. (There were conflicting accounts about whether Gerberding was on the call or not).

Since then, however, Dr. Gerberding and other CDC officials were made aware of a Portuguese study, published last October, which reported that 7.2% of children with autism had confirmed mitochondrial disorders. The authors also noted that, "a diversity of associated medical conditions was documented in 20%, with an unexpectedly high rate of mitochondrial respiratory chain disorders."

"Apparently, the Portuguese study really got their attention," one of the participants said. "It's a highly significant finding. And it's worrisome enough to definitely look into. I think the CDC people know that."

They also know that some reports estimate the rate of mitochondrial dysfunction in autism to be [20% or more](#). And the rate among children with the regressive sub-type of autism is likely higher still.

Vaccine safety officials on the March 11 call may have been open to discussing mitochondria and autism, but they were probably highly unprepared for what was to come next.

One doctor reported his findings from a five-year study of children with autism, who also showed clinical markers for impaired cellular energy, due to mild dysfunction of their mitochondria.

The biochemistry of 30 children was studied intensively, and in each case, the results showed the same abnormalities as those found in Hannah Poling, participants said. Each child had moderate elevations or imbalances in the exact same amino acids and liver enzymes as Hannah Poling.

All thirty children also displayed normal, healthy development until about 18-24 months of age, when they quickly regressed into clinically diagnosed autism (and not merely "features of autism"), following some type of unusual trigger, or stress, placed on their immune system.

Researchers explained on the call that some data show that mitochondrial dysfunction can convert into autism "in numbers that make it not a rare occurrence," one participant told me. They explained this as "a distinct syndrome; not a mixed bag at all. Every kid had mild mitochondria dysfunction and autistic regression."

Another surprise came when one researcher announced an "inheritance pattern" that linked each case through the genetics of the father: In families where two cousins had autism, the genetic link was always through the father.

This unexpected discovery would clearly implicate nuclear DNA inheritance, and not mitochondrial DNA, which is inherited only through the mother.

Gerberding and others had previously insisted that Hannah and her mother, Teri Poling, both had the same single point mutation in their mitochondrial DNA. CDC officials asserted that Hannah had a pre-existing disease, a rare genetic glitch in her mitochondria, that may well have manifested as "features of autism" on its own, perhaps even without an environmental trigger.

"It's not in the mitochondrial DNA, and it's not rare," one participant confirmed. In fact, he said, many people probably carry the nuclear DNA mutation that confers susceptibility to mitochondrial dysfunction, they just don't know it.

1-in-50 GENETIC RISK?

On the call, speculation on the prevalence of a genetic mutation that could confer mild mitochondrial dysfunction in the general population ranged from about 1-in-400, to a staggering 1-in-50, or 2% of all Americans.

There was talk about the urgent need to do mapping studies, and find the locus of this gene. Some of the researchers said they want to test all 30 children for the actual DNA mutation. There was some expectation that they might discover that the mutation goes back generations, so parents and grandparents might be tested as well.

One belief is that a particular mutated gene may have become prevalent over the centuries, because of selective advantage. Mild mitochondrial dysfunction reportedly has been associated with intelligence, because it can increase activity of the brain's NMDA receptors. A large number of receptors can produce increased intelligence, but it can also increase risk of brain disease, one doctor explained to me. It's possible that increased receptor activity acts in same way.

But not everyone agrees that mitochondrial dysfunction is a purely inherited affair. Some researchers believe that, while a susceptibility gene for mitochondrial problems certainly exists, some type of environmental trigger, or "adversity," as one doctor put it, is needed to turn the mutation into a dysfunction.

The medical literature is replete with studies on mitochondrial health and the adverse impact of mercury, aluminum and other toxins. Even AIDS drugs like AZT and prenatal alcohol consumption can damage mitochondria and impact cellular energy.

The mercury-containing vaccine preservative, thimerosal, for example, "can definitely kill cells in vitro through the mitochondria," one teleconference participant told me. "And some people are beginning to suspect that the dose of hepatitis B vaccine given at birth might be interfering with proper mitochondrial function in certain children."

While the cause of mitochondrial dysfunction is up for the debate, so too is its potential effect on regressive autism.

All the researchers I spoke with agreed that, in many cases, there was an underlying, asymptomatic mitochondrial dysfunction, aggravated by some other stressful event imposed on the child's immune system, resulting in autism.

Such "metabolic decomposition" occurs when a child's system simply "cannot meet the energy demand needed to fight the stress of illness," one doctor explained.

But what causes the stress? That is a very big question.

Apparently, in only two of the 30 cases, or 6%, could the regression be traced directly and temporally to immunizations, and one of them was Hannah Poling. In the other cases, there was reportedly some type of documented, fever-inducing viral infection that occurred within seven days of the onset of brain injury symptoms.

All 30 of the regressions occurred between one and two years of age, at a time when the still-developing brain is particularly vulnerable to injury.

But if a significant minority of autism cases was caused by mitochondrial dysfunction aggravated by common childhood illnesses, then shouldn't we see fewer cases today than, say, at the beginning of the 20th Century? And wouldn't developing countries likewise show far more prevalence of autism than the United States?

Not necessarily, some experts said. They noted that many viral infections are still quite prevalent in modern-day America, and many children still get these types of viral infections about once a month, on average.

If that is the case, then why doesn't every child with "mito" dysfunction regress into autism? Surely, they must encounter viral infections during their yearlong window of neurological peril.

Again, not necessarily: Some doctors said it would depend on the severity of the dysfunction, the type of virus encountered, and perhaps other factors that are still not understood.

But at least two of the 30 kids with mito deficiencies were pushed over the edge into autism by their vaccines, and some researchers feel the number is probably much higher than that in the larger population.

"Vaccines, in some cases, can cause an unusually heightened immune reaction, fever, and even mild illness," one participant said. "A normal vaccine reaction in most kids would be very different in a kid with a metabolic disorder. We know it happened to at least two kids in this study, and I'm certain there are many more Hannahs out there."

One theory currently in circulation about what happened to Hannah and other children like her, is an apparent "triple domino effect." According to this hypothesis, it takes three steps and two triggers to get to some types of autism, and it goes like this:

STEP ONE: Child is conceived and born healthy, but with an underlying nuclear DNA genetic susceptibility to mitochondrial dysfunction, inherited from dad.

TRIGGER ONE: An early environmental "adversity" occurs in the womb or during the neonatal period, perhaps caused by prenatal exposure to heavy metals, pollutants, pesticides and medicines. Or, it occurs in early infancy, through environmental toxins, thimerosal exposure, or even the Hepatitis B vaccine "birth dose." This trigger results in:

STEP TWO: Child develops mild, usually asymptomatic mitochondrial dysfunction (though I wonder if the ear infections and eczema so common in these cases might also be symptoms of mito problems).

TRIGGER TWO: Child, now with an underlying mitochondrial dysfunction, suffers over-stimulation of the immune system beyond the capacity of his or her metabolic reserves. This stress is either via a viral febrile infection, or from multiple vaccinations, as in the Poling case. This trigger results in:

STEP THREE: Acute illness, seizures, encephalopathy, developmental regression, autism.

Such a scenario might help explain why autism has increased right along with the addition of more vaccines to the national schedule.

And it might help explain why autism rates are not plummeting now that thimerosal levels have been significantly reduced in most childhood vaccines.

It's possible that exposures from the flu shot, and residual mercury left over in other vaccines -- perhaps in synergistic effect with aluminum used as an "adjuvant" to boost the immune response - might "contribute to the toxic mix that causes childhood mitochondrial dysfunction in the first place," one of the doctors said.

But like many hypotheses, this one has competition. Some researchers believe that the modern American diet is largely to blame for an increase in the number of children whose underlying mitochondrial dysfunction is "triggered" into autism by febrile infections.

The answer, they hypothesize, is corn.

The American diet has become extraordinarily dependent on corn oil and corn syrup used in processing, these experts contend. They say that corn oil and syrup are inflammatory, whereas fish oil is anti-inflammatory. Could our diet be a factor in making this mutated gene become more pathogenic? It's a biochemical defect that leads to biochemical disease, supporters of this theory say: The gene itself becomes more of a problem.

WHAT NOW?

This information raises so many questions it makes your head swim.

First and foremost among them: What to do about vaccinating children with known mitochondrial dysfunction?

In many respects, these kids should be first in line for vaccination, to prevent some illnesses that might trigger an autistic regression during the window of vulnerability. On the other hand, with multiple vaccinations, such as the case with Hannah, there is also a risk of overtaxing the immune system, and likewise triggering regression into autism.

What's needed most urgently, if possible, is a quick, affordable and efficient method of testing children for low cellular energy, perhaps before vaccination even begins.

There was some discussion on the conference call about altering the vaccine schedule in some way, to lower the risk of immune over-stimulation in susceptible children. Certainly, pressure will grow for a change in the schedule - the question is how, when, and if such changes will be made.

Some of the suggestions may not be popular among public health officials. They include:

- 1) Establishing a maximum number of vaccine antigens to which any child could be exposed on any given day.
- 2) Permitting the option of separating out the measles-mumps-rubella (MMR) live virus combination vaccines into three distinct "monovalent" shots.
- 3) Not giving the varicella vaccine (chicken pox) on the same day as the MMR injection - the CDC recently withdrew its recommendation for the Pro-Quad MMR+Varicella vaccine because it doubled the risk of seizures.

Another option is to create new "recommendations for administering multiple vaccines to children who have fallen behind in the recommended childhood immunization schedule," according to the website of the Institute for Vaccine Safety at Johns Hopkins Bloomberg School of Public Health.

Hannah had missed some shots and her doctor decided to "catch up" with the schedule by administering five shots, containing nine vaccine antigens, at once. But some autism activists have pointed out that giving five shots in one day is not that uncommon.

Moreover, they claim, many children regressed into autism following normal vaccination, when the parents religiously adhered to the official schedule.

According to the Johns Hopkins site, "Additional research is needed to determine if other children with autism, especially those with 'the regressive form' of autism, have the same or similar underlying mitochondrial dysfunction disorders."

It adds that, "the advisory groups who make recommendations regarding vaccines will undoubtedly examine this case carefully and make decisions regarding the potential need for changes."

That day may come sooner than you think. It was just announced that, on April 11 in Washington, DC, the National Vaccine Program Office at HHS will convene a meeting of the National Vaccine Advisory Committee's Vaccine Safety Working Group. The Working Group was established to go over the CDC's Immunization Safety Office draft research agenda, and to, "review the current vaccine safety system."

The meeting is open to the public, and I have my seat reserved. But I honestly don't envy the Working Group's very tricky task at hand.

It remains to be seen how all this plays out. And many important questions still lie ahead.

For example, if mitochondrial dysfunction turns out to be as common as 200-per-10,000, and autism is now at 66 per 10,000, did anything bad happen to any of the other 134-per-10,000 children, apart from autism (i.e., ADD, ADHD, speech delay, etc.)?

Moreover, if 10-20% of autism cases can actually be traced to an underlying mitochondrial dysfunction, then what about the majority of autism cases where this did not come into play?

And, if 20% of autism cases are mito related, and 6% of those cases regressed because of vaccines, that would mean that at least 1% of all autism cases were vaccine related. Some estimates of autism go as high as a million Americans - that would mean 10,000 people with vaccine-triggered autism, and billions of dollars in the cost of lifetime care.