Interview with Dr. Mary Megson: diagnosing and treating developmentally delayed children

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Abstract

Autism may be a disorder linked to the disruption of the G-alpha protein, affecting retinoid receptors in the brain. There are retinoid receptors in cells all over the body. They are in the nucleus of cells; many times a hormone or other messenger will give a signal to a receptor in the cell wall, which then conveys it through another protein called a G-protein; it is then carried out in the center of the cell. So they help translate, in genetic terms, the message that's given to the cell at the edge of the cell—at the cell wall. Autism may be caused by inserting a G-alpha protein defect, the pertussis toxin found in the DTP vaccine, into genetically at-risk children. This toxin separates the G-alpha protein from retinoid receptors. Those most at risk report a family history of at least one parent with a pre-existing G-alpha protein defect, including night blindness. Natural Vitamin A may reconnect the retinoid receptors critical for vision, sensory perception, language processing and attention.

Bethanechol mimics acetylcholine. It gives secretory function back to the gut in that it stimulates muscles around the pancreas and the gall bladder to get everything in the gastrointestinal tract like enzymes to improve food digestion. It gives normal movement of the gut wall, which helps in peristalsis especially if the individual is constipated.

Keywords: Cod liver oil, Vitamin A, Bethanechol, Autism

My guest today is Dr. Mary Megson. Dr. Megson is a Board-certified developmental pediatrician in private practice in Richmond, VA - The Pediatric and Adolescent Ability Center. She was Director of Developmental Pediatrics at Children's Hospital in Richmond for nine years.

Her current private practice is devoted to diagnosing and treating developmentally delayed children with a specialization in autism. A main research area of Dr. Megson's is the use of Vitamin A and Bethanechol in the treatment of autistic spectrum disorders. Dr. Megson conducted a clinical trial to investigate her hypothesis that G-Alpha protein defect is a high-risk factor for developing autism after vaccination. Her article is entitled "Autism: is a G-Alpha protein defect reversible with natural vitamin A" and appeared in Medical Hypotheses (June, 2000;54(6):979–83).

It's a pleasure to welcome you Dr. Megson.

Thank you. I'm glad to be able to talk to you today.

Dr. Megson, tell us how you think our children see the world?

As I think about it, it's easier for me to explain by going back and explaining how I got into this research. I practiced child development for many years and I studied these children, the way they looked at the world, and their language development. And what I noticed was that in many cases they would progress in language rather than stay at the same rate in inquiring new skills over time. So I felt we were dealing with a blocked pathway rather than permanent brain damage. I started studying cross pathways in the brain, especially language pathways. And Dr. Rimland knew what I was doing and told me about a researcher, Ron Evans, who at that time was at Cornell and he had isolated retinoid receptors in the nucleus of the cells in the hippocampus, which is right where the language pathway goes from the left side of the brain to the right. When blocked, this blocked learning and memory in multiple animal models.

Why would autistic children have any vitamin A problems? That made no sense to me at all. That might explain why their vision was distorted. So I started to look at vitamin A and then I figured out that there are two forms of it. The natural form is a liquid at room temperature, and we make it into a solid—for our formulas, our low fat milk and all our solid forms of vitamins. In the natural form are found in foods we don't eat much anymore, like liver and kidney, a little bit in milk fat but not much, and old-fashioned cod liver oil.

I felt like if these Vitamin A receptors were blocked in the middle of brain where language processing goes for processing the sound in the left temporal lobe to the right hemisphere where you process image, then if the children were exposed to the solid form of Vitamin A—not much in the natural form—if I gave them small daily doses of the natural oil of Vitamin A form, would it help them with language?

The first child I treated was a 5th grader who was non-verbal. He was pacing and flapping and I put him on a normal dietary requirement amount of vitamin A in small daily doses of cod liver oil. And when he came back to see me three weeks later, I walked in the room, he was telling his mother, "Leave me alone. I can get up on this table by myself." That was the beginning of my research.

So then I asked, "What could I get in family histories that might suggest a vitamin A problem?" And since that time in well over half the cases, I get a history of night vision problems in one parent or another of the affected child. Rods in their eyes

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help them with the night vision. So I tried to figured out if anybody ever looked at rod functioning in autistic children and, sure enough, there were several studies that were published that showed poor rod function in autistic children and slightly abnormal rod functioning in a first degree relative.

So I started to think, well in the inner retina, we have rods and cones and the rods. The rods help us with night vision, but cones give us color and shape of objects. Well what is night vision? If the light is on, you see, if it's not on, you don't see. If these children lost light to dark in the daytime, how would that change their vision? And all I could think of was that they would lose shading on objects and shadows give us 3D.

Everyone is familiar with the way a lot of these children look out the corner of their eyes or appear to look off at an object when they look at it. But if you look at the retina, the rods are concentrated in the lateral aspects of the retina. You have more cones and fewer rods in the center aspect of the retina. So if they're looking at something like looking at someone else's face, the way they tell the intention of the other person towards them is by changes in shadows on that person's face as their facial expression changes.

If they looked right at them – the light on that face would land in their retina where they have mostly cones and they just see color. But if they look out of the corner of the eye at that person, then the light on that person's face will land off-center where they have more concentrated rods, with better rod functioning, better see those changes in facial expression, which is changes in shadows on that person's face. As I started the children on cod liver oil, a lot of them started looking right at objects within three days as if the rods were functioning better.

Then I started to think about language and how could I explain the behavior in the children how so often when they talk, they use phrases from favorite videos. So I started to think how children learn language. Children learn language by learning names of objects or nouns and then they learn to use it in a more abstract fashion. What if you took a child before they learned language at 18 months of age and you sank them into a world where they had a small area in the middle of their vision field where they could see three dimensions. And around that, they lost shading on objects, so they had no depth perception.

It'd be like sinking these children into a Picasso painting for most of the day. If you could restrict the visual field and have a small area where you could see what's out there clearly, what happens is, most of the day then, you are hearing words coming from a part of your visual field where you just have colors and shape, which is what normally functioning cones would give these children. So it really functionally disconnects what they're hearing from what they're seeing, but these children are very bright. They learn early on if I set my box and I stare at something like the TV, I'm going to hear the right words for what I'm looking at. So when they start to talk a lot and use phrases from their favorite videos or television programs—and they crave watching TV or videos—sometimes they want to stop the videos and reverse them and watch them again and again as if they're trying to look at the action that's on that screen and identify what makes that string of words exactly define that action. We force them to learn language that way. Everyone's familiar with Lovaas' wonderful work in ABA and different teaching techniques that people have discovered that work very well with these children. In most of those techniques, the people that are teaching them are getting in part of their visual field where they give them the right name for what they're looking at. So what they're hearing is connected to what they're seeing at the same time. They get it, because they have normal brains. And that's why these children make such rapid progress in ABA.

At the same token, if they have a teacher in special ed class, standing across the room talking to six of them and they hear a teacher's voice coming from where they just see color, it does not make sense with what they happen to be looking at that time, then they are not going to know what the teacher's saying. Donna Williams –an adult British woman with autism – wrote a book *Autism—An Inside-Out Approach: An Innovative Look at the Mechanics of 'Autism' and Its Developmental 'Cousins'*. And in that book, she talks about thinking in "mono-channel" and what she means by that is: if what you're hearing doesn't match with what you're seeing at the same time, what are you going to do? You are either going to listen or look.

And these children learned so quickly visually – that's why they're looking at something, even though their hearing is normal, if mother calls them from a different part of their visual field where they can't really see her—just see color—they're going to ignore what she's saying because her words don't match what they have been looking at the same time. So a lot of these children act deaf even if their hearing is normal.

Dr. Megson, this is really fascinating and it's touching too. It sounds as if you really have tried to look at things discerning the child's perspective.

Yes, that's part of what's been so wonderful about what I've figured out the last several years. And that is that these children are logical. If all you have in certain parts of your visual field is color and shape, what is it that you are going to do? You're going either create a pattern, like line up objects, or you sort them by color. This is why an autistic child might line up cars on a Saturday night, playing with their cars, and then go to bed and wake up the next morning, go to the door of the playroom and they're thinking, "I want to play with my blue car—it's number three in the line." They look at the room and they look for that pattern in the part of the visual field where they can't necessarily see what's there. They're looking for that line with the blue in the middle. If mother cleaned up, they have to look at all the blue spots in that part of their visual field all over the room and do all that work all over to find their car. So they throw a tantrum and the parents say, "Oh it's just because they're autistic." Everything they do is based on logic. It takes me a long time to figure this out sometimes.

For example, a lot of them read early—learn numbers and letters early. Why is that? If you think about it, if you have a "C" in that part of your visual field where you can see, when it goes back to the part of your visual field where you just have color shape, you still have a C. So letters and numbers are the only things that maintain the same meaning throughout their entire visual field without changing on them. And so they're fascinated with that.

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Dr. Megson, what do retinoid receptors in the brain do?

There are retinoid receptors in cells all over the body. They are in the nucleus of cells and a lot of times a hormone or some sort of messenger will give a signal to a receptor in the cell wall, which then conveys it through another protein called a G-protein and then it's carried out in the center of the cell. So they help translate, in genetic terms, the message that's given to the cell at the edge of the cell, at the cell wall.

Ron Evans' beautiful work showed in multiple animal models that if you block vitamin A receptors in this pathway in the brain, in—say for example in mice or rabbits—if you put them through a maze and block these receptors and change the maze and try to put them through it again, they can't learn the change. He actually tried this with two sets of mice. One group he deprived of vitamin A, they couldn't learn the change. The other group had normal vitamin A in their diet and when they were put through a maze and it was changed and they were able to quickly learn the new pattern. In a later study, when the ketinol was added back to the feed, these learning problems resolved in 40 hours.

So vitamin A, especially in young developing children, is very important to maintain function of these receptors.

What are G-proteins, G-alpha proteins and why are they particularly relevant to autism or sensory processing challenges?

Because they've got a history of night vision problems—in a lot of the parents—I have looked at what causes that and there is incomplete congenital stationary night blindness as caused by a single protein defect in a G-protein. And these proteins sit right inside of the cell wall. They are attached to cell wall receptors – they go in and out the cell wall. And these cell wall receptors will take an impulse or some sort of message from outside the cell – either a signal or hormone will land on those receptors – they go through the cell wall and then the G-protein, which is a squiggly protein right inside the cell wall between that and the nucleus, modulates the signal. They either upgrade it or downgrade it. They modulate all of our senses—taste, touch, vision, hearing, smelling. That's why these children have so many sensory problems.

What I've figured is on the genetic basis, I can get a history in one parent or another of something that goes along with the single protein defect in the G-protein, which would not be a problem for the child at all. The second defect we add early on could be several things, such as Pertussis toxin with a DTP/DTaP. This vaccine component would add a second defect and that would block these G-proteins and thus, the child's cell wouldn't be able to modulate the signal—upgrade or downgrade the signal.

It's really relative. I'll give you one example. A lot of children will come in and will only eat certain types of foods. Well there are several reasons for that but one of them is all of our taste pathways, except for salt and sour, go through G-proteins. So certain foods like sweets for a lot of the children taste like what meat tastes like when you have a bad cold and you can't smell it. You just don't want it; you taste texture. And so they become terrible eaters after 18 months in many cases because they lose the taste or can't modulate the taste. Some crave salty foods, and /or sour foods.

All of this just sounds so logical and so relevant. You're right – it just gives a really logical explanation for so many things that our children do. And you can't just dismiss what they're doing as though they just do it because they're autistic. You really need to respect the child and look into why they're doing it and you find all these logical reasons.

Because different autistic children have many shared behaviors, I felt that there had to be a logic to their behavior. And I really learned a lot of what I know by listening to mothers – mothers are always right about their children. I can say that as having practiced for 25 years in pediatrics and also having four children and watching the child's behavior. Sometimes it takes me hours to figure out why they do certain things. And then I go and try to figure out if how I understand that behavior and why they're doing it, goes along with the science in the brain pathways. I have learned everything from mothers and children.

And also, what's terrific is for people like you to actually look into the science and say there must be science behind this and actually delve into it. And that really benefits the children so I admire that. Dr. Megson, do any other vaccines wreak havoc with this genetic vulnerability. I know you've already mentioned Pertussis, do any others?

Well I think what we're dealing with is a child with an underlying genetic weakness and we hit them several times. And I think we've been adding so many insults early in childhood with vaccines, that different factors are pushing different children over the edge. In many children it might be that extra amount of mercury—Thimerosal— they got in their vaccines. In some children, it's the immune system is turned on so many times and is over reactive and they have tissue type associated with autoimmune disorders anyway. For another child, it's the chronic viral infections they can't fight when they go into their MMR vaccine. So I think there are different elements in the sequence of events that we do with little children right now that are pushing them over the edge into autism. And this is the reason why the frequency has increased so dramatically.

What's the chain of events whereby live viral measles vaccines adversely affects retinoid receptors?

The Measles, Mumps, Rubella vaccine is three viruses. They've been altered so you don't get the diseases but they're living. And they go into the body and they hang around. That turns on your immune system so when you're exposed to the real diseases, you don't get them because you have antibodies. The problem with this is, that the measles—the antibody the body makes against measles—cross-reacts with their own tissues—called intermediate filaments.

And intermediate filaments are really important in three places in the body. Those tiny little filaments hold the cells that line that gut wall together and create the barrier from where the food is and the digestive juices and the blood stream. So you get a leaky gut. Intermediate filaments hold a single layer of

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epithelial cells together, that forms a blood brain barrier so you get a leaky blood brain barrier.

And intermediate filaments surround the tiny little bile canals where you dump out your toxins from within cells in the liver into the bowel and allows for excretion through the gastrointestinal tract of toxins. So imagine if you have an autoimmune response in those three places, what havoc is wreaked upon the body.

So the MMR can disrupt gut tissue and tell us how it disrupts cell-to-cell communications specifically.

On an autoimmune basis, if they're making antibodies against the measles, they're making antibodies against those filaments. So you end with an autoimmune reaction to the very filaments that are creating that barrier in the gut wall. This allows partially digested foods to enter the bloodstream such as opiate peptides from wheat and milk products. These peptides get into the brain causing behavioral changes in these children.

Are there any other places that it disrupts cell-to-cell communication?

Blood brain barrier, yes, in the cells in the liver.

And that's the intermediate filaments?

Yes. Think about it: many toxins go into the gut, to the brain, making these children sensitive to pesticides on fruit and vegetables.

Okay. What are the kinds of metabolic problems that result from natural vitamin A depletion?

Vitamin A is important as a hormone, important in reproduction, it's important in vision, especially in night vision. It's important for cell growth and repair of epithelial cells. So if you're depleted in your vitamin A—and measles we actually treat with vitamin A—and you need the form of vitamin A, which is called the cis form of a molecule that's naturally most concentrated in cod liver oil and that's why I use that as my source. You need that form of vitamin A to decrease reproduction of that artificial measles virus that these children have.

So vitamin A is depleted by that chronic measles infection then if there's inflammation in the gastrointestinal tract wall, they can't reproduce those cells, replace them and heal. They have developed visual problems, poor immune function and leaky gut.

So it's like a vicious cycle.

Right.

What does Pertussis vaccine do to G-alpha protein pathways and consequently immune and metabolic systems?

Pertussis vaccine – Pertussis toxin itself, which is in both types, the A-cellular and your regular DPT vaccine – inserts itself in G-protein and adds a second defect in these genetically vulnerable children. With a double defect— that blocks certain metabolic pathways in the body. And these pathways are important in that a signal comes to the edge of the cell and lands on the receptor. The G protein acts like a switch – turning on or off metabolic reactions in the cell.

What we're doing in many cases is double whammying the off switch so that other metabolic pathways are left on all the time. And I think a lot of the depletion in nutrition that we see in these children is the fact that, for example, if B6 is your enzyme—important for a chemical to go from A to B—and that process is on all the time, you're going to use a lot of B6. So I think there are many reasons for the nutrient depletion we find in these children. But some of it has to do with the loss of this "off switch" in cells.

Since we've learned that both Pertussis and the MMR can disrupt calcium channels, can you tell us what calcium channels are supposed to do?

It is *s*ubtle increases and decreases in calcium within a cell that tells us how much neurotransmitter or hormone or whatever to excrete. If you look at the cross path way for language; in the first cell, you have cell wall calcium channel, which is just a pore in the cell wall where calcium rushes from the outside to the inside. The concentration of calcium outside cells is about 20,000 times higher than within cells. And what should happen – for example, let's look in the rods. Light hits a rhodopsin, which is the cell wall receptor; it's attached to that G-protein. One G-protein opens the calcium channel in the cell wall, another one closes it.

We double whammied the closure switch so that calcium – its the calcium going from higher concentration outside the cell, across the cell wall where it's less concentrated, that depolarizes the membrane and lets you dump out your neurotransmitter to send the message to the next cell. What should happen is that calcium channel should open and then close. If you double whammy the closure switch, then you lose your barrier; you don't have that cell wall gradient.

Thimerosal in vaccines blocks other calcium pumps both at the cell wall and when calcium is taken in and out of storage within the cell. And it's these tiny fluctuations of calcium in the cell that allow you to excrete neurotransmitters, insulin and hormones, etc. This might be part of the reason that a certain subset of children is vulnerable. They have a genetic defect that affects calcium signaling and then we hit it again and again and again in many ways.

So what can you do to help this?

Well some of what we do nutritionally helps this. We use magnesium in one of our supplements that helps close these calcium channels. DHA found in fish oil is another supplement we use in these children and the form of vitamin D found in cod liver oil also helps close these calcium channels. So there are different natural nutritional treatments we can use to help with these pathways.

You mentioned mercury is also disrupting calcium channels. Does anything else do that like clostridia or anything?

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When a child is thrown on antibiotics, it gets rid of the infection you want to get rid of like the ear infection, etc., but also changes your healthy flora in the gastrointestinal tract wall. Yeast is a problem I believe because it makes proteins that are almost exactly the same as human proteins called regulators the G-protein signaling. So those yeast proteins – if the child's been antibiotics around the time they get their vaccines – can get in add another defect in G-protein signaling.

One bacterium called *clostridia* makes a toxin that also disrupts signaling with G-proteins. It acts just like Pertussis toxins in that way.

So what do you do about this?

Well you don't want to, in these children, overuse antibiotics. You want to make sure they're healthy well and not on antibiotics around the time when they go in and get their vaccines. There are certain precautions you can take.

Now you've I think mentioned some concrete examples of inadequate vitamin A or G-alpha protein defects. Are there any others you'd liked to mention? I think you've already mentioned the sideways glance.

Yes, the sideways glance, blocked language. When I look at the pathways that are affected that could lose a closure switch for certain metabolic pathways that these G-proteins turn on or turn off. If you lose the off switch and other pathways are left on, it affects glucose metabolism and lipids. I'm finding unstable glucose metabolism in these children and high lipids in many of the children. And it's not because the mothers are feeding them wrong, it's too persistent. It's pathway on without the off switch.

And interestingly when I look at the family history, I get a very high instance of diabetes in first degree relatives of the affected child and hyperlipidemia with early heart attack, with death under age 55 in a first degree relative in one of three families. There are other disorders, genetic disorders, of G-proteins such as pituitary and thyroid adenomas that are caused by a defect and we environmentally add second defect in G proteins that block pathways. So those are the risk factors.

Colorblindness is another risk factor and types of parathyroid disorders.

What would you think if a child walked into your practice and had dilated pupils or pale skin?

With a double defect in the G-protein, you block a neurotransmitter called acetylcholine. And if you look at the pathways that are left "on" if you block that "off switch", there are multiple pathways in tissues throughout the body that are on saying, "Pour out your adrenaline." It's as if we have left these children in "fright or flight" and two components of that response are dilate your pupils to let the light in so you can see better and the other is constrict blood flow in your skin to get more oxygen to your muscles so you can run away more efficiently from danger.

So when I walk in the room, it takes me about 15 seconds to figure it out. The child has paler skin than their parents. Their pupils are bigger than their parents in the same light. Dilating pupils also are seen with heavy metal poisoning. And a lot of times when I check the pupils, I put the child in the dark when I'm looking in their eyes and then shine a light in them, they don't constrict down. So that could be a sign of either the metal and/or the fright or flight response.

Would a child with ADHD have these types of symptoms?

Yes, yes, yes. I think we're dealing with a spectrum with autism at one end and learning disabilities, ADHD, at the other end of the spectrum.

You just mentioned a few moments ago acetylcholine. How does that fit in with all of this?

Well with a double defect in the off switch, you block the neurotransmitter called acetylcholine. Now acetylcholine, which many of you parents are not going to be surprised to find out, is the neurotransmitter in the gastrointestinal tract, which gives us what we call coordinated peristalsis. And what this is, is the coordinated squeezing movement of the muscles surrounding the gastrointestinal tract, which is a long tube that moves food from one end to the other for normal bowel movements.

And also, what I figured out, is when you block out acetylcholine in its function in the gastrointestinal tract, through the vagal nerve, it modulates hippocampal cells in the cross pathway for language so you switch off language. So there are a lot of children that I can treat nutritionally for several months – I can bring them in my office; I can use a medication called Bethanechol, which mimics acetylcholine. It does not cross the blood brain barrier. It gives secretory function back to the gut in that it stimulates muscles around the pancreas and the gall bladder to get everything in the gastrointestinal tract like enzymes to improve food digestion. It gives normal movement of the gut wall, which helps in peristalsis especially once you're constipated.

But indirectly, one in ten children when the drug kicks in, in the office, develops 3D in the peripheral visual field, which older children who are verbal enough to tell me actually tell me as it happens. It also reconnects language in some of the children. Even the first dose.

Okay, so wait. Is this a coincidental effect where it helps both the gut and language or is there a direct cause and effect relationship between the gut and then the language?

Well we're just learning all of this. When you block acetylcholine with a double defect in that G-protein, you block acetylcholine in the gut wall through the vagal nerve—it goes back up and turns off those cells where language goes from the left side of the brain, where we process the sound, to the right, where you pick up the visual image of the object that the word stands for.

So it's an indirect effect, by stimulating the vagal nerve. I can get better gut function and indirectly help connect language in some of the children. Acetylcholine also is the neurotransmitter for the opposite of the "fright or flight", which is sit back,

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relax, focus, digest your food. A lot of these children visibly come out of fright or flight. When they walk in the office; they're pale as a ghost with dilated pupils. We can treat them and a lot of the time their skin color returns to normal, the pupils constrict to normal size in the office with the first dose.

So for our listeners, could you please summarize how vitamin A therapy and how Bethanechol can help with proper neurotransmission and language and other sensory processing.

The way I see it clinically is that these children have a blocked pathway in the brain and it involves some vitamin A receptors in the middle of the brain and they need the natural form of vitamin A, which you find in low dose cod liver oil. Vitamin A also is how you treat measles, if they have a chronic measles infection they can't get rid of from their MMR. It's also important if you have an inflammatory response anywhere in the body to help turn off that inflammatory response.

So vitamin A is important all over the body in these children. It's critically important to replace epithelial cells in the gut wall to give you a healthier gut wall. What we've done in these kids is create a form of ADHD, in that we've thrown them into chronic anxiety. They're not necessarily hyper but they're anxious with adrenaline pouring out— as if they're facing danger. Bethanechol mimics acetylcholine and takes them out of that fright or flight response.

I want to emphasize I think that the vitamin A and other nutrients that we use in these children are healing the body. I think of the Bethanechol, not as a miracle drug, but as a "flip-the-switch" in some of the children and in healing and improving gut function. If children go on it for several months, I always ask parents to give them a trial off and I'm not seeing regression in the children that come off. But it's the nutritional component that is so important in healing the body and vitamin A is only one small component of that in healing these children.

Do both vitamin A and Bethanechol therapy need to be closely monitored by a treating physician?

I think whenever a person is on a medication, it needs to be monitored closely. The vitamin A doses that I'm using are in the normal dietary requirement range for most of the children. I'm not seeing only children develop toxicity, but you have to be careful using fat soluble vitamins A, D, E and K which can be toxic in high doses. So both of them should be monitored by a physician. Bethanechol is a prescription. It helps in some children, it doesn't help in others. There is a potential, because you're setting off the opposite of fright or flight, that you could have airway constriction.

I watch all the children for an hour in my office after the first dose. I have not seen that in any of the children. About 3% get hyperactive, some it doesn't help. I have parents stop it if it doesn't make a difference in the child's gut functioning or language functioning over a three-day period after they start on it. But I have not seen any other negative side effects.

Do you recommend any other interventions to be done concurrently?

Oh yes. My research is one small component of the treatment in an autistic child. All the pieces need to be in place for maximal outcome. The way I think of it in a logical sense is a four-step that process: (1) restrict, restrict foods they cannot digest or are allergic to, (2) restore, (3) repair, (4) reconnect.

Restore normal nutrition to the child and restore health of the gastrointestinal tract. We use nutritional supplements to help repair that tissue and what we see is a reconnection in terms of function, language, sensory function, and IQ scores improve in these children with biomedical intervention.

So restrict, restore, repair and reconnect. Is that correct?

That's the way I think of it, yes.

And some of the things that you've mentioned: so far you've mentioned magnesium, DHA, vitamin C, vitamin A, Bethanechol. Is there anything you've discovered about what applies to our kids with autism that you think may also have far reaching health implications for other maladies as well?

Yes. The defect for night blindness is one of the major cancer genes called P21 RAS and if you add a second defect in that gene protein, you block the off switch for cell growth differentiation, and survival. You have some other metabolic pathways stuck on and so you have inflammatory processes and you turn on the process to create new cells and you've lost the off switch, that's cancer. We know that in animal models, if you put a double defect in that G-protein, one in three animals get cancer in the colon and I've got that in one of three of the autistic children.

These children also have a form of what we're hearing about more and more called metabolic syndrome with high lipids and abnormal glucose metabolism. What I'm seeing is that this tends to normalize with the nutritional support that we're giving these children and a healthy diet. So in a way we're preventing their early cardiac diseases and diabetes. We're lowering their diabetes risk through our nutritional treatment. But these children are at risk for metabolic syndrome.

And before we move on a little bit, can you just reiterate the relationship between G-alpha protein or G-proteins and retinoid receptors? The relationship between them?

Yes, the G-proteins are cell proteins that sit right inside the cell wall that take the message from where it's given to the cell wall receptor and modify it before it's interpreted in the nucleus of the cell. The retinoid receptors are actually in the nucleus of the cell where transcription takes place for that message to be carried out whether it's making proteins or turning on and off certain metabolic pathways.

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Dr. Megson, have you needed to do anything that you're colleagues might consider sacrifices in order to pursue the course you've chosen and what kind of response have you had from mainstream medicine?

That's a wonderful question. I wake up in the morning and the premise I use is: wake up every single day and do the right thing. And I think I've learned this working with families and children with autism. I had to leave my child development program in the Children's Hospital here and set up my practice independently. I had to be in an independent practice and have intellectual freedom to look at and study why these children got better when I gave them cod liver oil. So I've had to make changes in my own life. I never regretted it.

I was asked in June of 2000 to go to Chicago and present what I knew to the American Academy of Pediatrics. There were people there from CDC and NIH and the infection control committee members from American Academy of Pediatrics. It was a two day meeting, and some other people spoke as well, and at the end of the meeting, Alexander Walker spoke, who was an epidemiologist at Harvard School of Public Health, and he went through each of the studies that were presented and said, "This is this and this is that," and he got to my study, he said, "This is feasible, this is logical, you better go out and look into this" and I haven't heard anything from them since.

So I have tried to go through the right channels to create change and to try and improve things in a positive manner. After I came back and I started to get a lot of questions from parents about what should I tell these parents asking about what should we do about vaccines in the siblings, of the ones that were vaccine affected. I called and spoke to the Executive Director of the A.A.P. and the answer I was given was, "Well, with what you know, you have to do the best you can in each individual case." I am pro-vaccine but very pro-safe vaccine, and I think the way we need to look at this is that our knowledge of the wonderful, good that vaccines have done over the last 100 years in terms of preventing deaths from infectious disease is crossing our increasing knowledge of the individuality of the way people's immune system works and the way they metabolize toxins, etc. So we're at a crossroads and we're gonna have to make a change in our system. The children with autism are teaching us that.

Thank you so much for appreciating that our children are teaching us. The Autism Research Institute just said that your practice has the most children improving in coming out of the spectrum than any other practitioner. How do you feel about that? Do you consider yourself a reformer?

First of all, I feel extremely honored. I'm in the trenches treating these children every single day and sometimes you lose your global perspective. I'm always thinking about this child who didn't get better from the last visit. What happened? What was I not doing well enough? And I'm constantly learning. I would like to tell parents to take heart, learn as much as you can, find the resources around you to use the biomedical intervention. I'm finding a lot of these symptoms reverse really quickly especially in the younger children but older children and adults even get better with biomedical intervention. And children with genetic syndromes get better.

So when I was given this honor, I was very surprised because I didn't know that I was so successful. I am always faced with new knowledge of what I can give, to help the next child. I will tell parents, as an example, I have a child that I had worked with for seven years and he underwent 2½ years of chelation therapy and still didn't have language. But based on recent knowledge working with the Geiers, we've come up with a new treatment and since November, the child has demonstrated the ability to read, write and is speaking in short sentences.

That's wonderful.

So I hope that's inspiring.

Absolutely. Would you like to share with us some additional stories, miraculous stories and positive changes that you've seen with your patients?

A fun story: several weeks ago, I saw a little boy from Tokyo. The father was a carpenter, the mother had saved up and the whole family had saved up to come to see me. And he came in and he was two years 11 months, almost three. He was pacing and flapping, no eye contact, no Japanese spoken, no English. He was going to be in this country for a month for I was very aggressive in terms of treatment. We started him on lots of things at once—supplements. And we got our labs and treated what was there, and about three weeks later, he was supposed to come back and see me before they went back to Japan. I was sitting at my desk and looking forward to one side at the door to my office and all of the sudden, this little white blanket comes into the door and this little boy pulled it back, smiled at me and said, "Hello, Dr. Megson," in English and then Japanese. Is that amazing?

That's wonderful.

His mother went home and she started a website to help other children in Japan know that there can be improvements in children with autism with biomedical intervention. So I feel so privileged because I see miracles like this every other day and that's what keeps me going in this hard work.

Thank you for sharing that with us, Dr. Megson. What would you tell parents who were worried about having more children?

Well I have my own bias. I think the gene that makes children at risk for autism has to do with very high ability and I think these are the parents that should be having children—all parents should be able to have children if they want to have them. But I think if parents are informed, they prepare before pregnancy in terms of the mother being in a good nutritional state. If she needs RhoGam, it is now available without mercury, without Thimerosal. Being very careful then, being careful during pregnancy and being very careful after the child is born in terms of if they choose to vaccinate the child, doing it in a safe manner.

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Most of you are probably familiar with Stephanie Cave, M.D.'s book, *What Your Doctor May Not Tell You about Children's Vaccinations.* Also in the National Vaccine Information Center website, there's a list of things you should look out for when you go in and take your next child in for their vaccines—if you decide to do that, how to do that safely.

I encourage—I don't discourage—families. I also educate them. If the family wants to have another child and the first child has a genetic syndrome, I send them to a geneticist so they could get the most up-to-date quotes of risk about having that genetic syndrome. A vast majority of children we've seen recently had regressive autism—children who were born normally and had early normal developing milestones.

What do you think about the parents who bring their children to you and what's the farthest anyone has ever traveled? You just mentioned Tokyo.

Yes I think that was the winner.

I can't imagine any farther than that.

Right.

So what do you think about the parents?

I've learned from parents every single day. I think it's wonderful. I find myself learning from them, having to constantly answer their next question and I think the parents are the ones who need to be congratulated because they're the ones who pushed all of us to do our research, to figure it out.

It's so unusual.

The children and the parents are just really blessed to have researchers such as yourself who are willing to do this. And would you please share your website address?

My website address is info@megson.com.

Well, Dr. Megson, what's the most important take-home message that you'd like to give parents of older children with autism or of newly diagnosed children?

I guess I've learned through hard work that you should have hope; because we're progressing so rapidly in our understanding of what's causing this disability and other disabilities. Thank you.

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