

## June 2000 OAA Newsletter

# Editorial - OAA Members attend Metabolic Conference in Boston

Happy Spring 2000! I'm happy to report that the Metabolic Conference in Boston this past March was a huge success...despite the bad weather! We arrived on Thursday before the conference and it was 70 degrees, the next day, a snowstorm hit. Several families cancelled due to the weather, but we had over 70 OAA members attend this year's metabolic conference, and one parent came as far as Italy to attend! Many families brought their children to the conference and OAA was able to provide childcare for them. The families spent time visiting with one another, checking out the vendor booths, and listening to a wide array of speakers. Thanks to Menta and Jamie Pitre, who video taped the conference highlights and we are offering the video tape of the conference for \$10.00. You can mail OAA a check to the above address for your tax-deductible donation for the tape and Menta will mail it directly to you. See pictures below from the conference.

In May I was fortunate to have been invited as a guest of Sigma Tau Pharmaceuticals to NORD's Corporate Council meeting and Tribute Banquet in Washington, DC. This newly formed committee facilitates dialogue about research and the development of treatments for rare diseases. I spoke to the Council on behalf of OAA, specifically speaking about the importance of parent support groups. My [speech](#) is on our website if you are interested in reading it. Cay Welch from the International Organization for Glutaric Acidemia, and Wendy Nawn, Tyler for Life also attended and spoke about Newborn Screening.

OAA is supporting an effort to expand the awareness about newborn screening, and will be offering a NBS lapel pin, on page 6 of the newsletter. There is a form to order one or as many you would like. Profits from the sale of these pins helps support the OAA. The pin is attached to a card that explains how newborn screening can save the lives of many babies. Thanks to Lori Sanchez, mom to Vincent, MMA, who came up with this brain child! Many other support groups around the country who benefit from newborn screening are actively participating in this fundraiser. They have designated September as being NBS awareness month.

If you are a parent, you will receive a copy of the *Mitochondrial and Metabolic Disorders Parent Guide* with this issue of the newsletter. This is a reproduction of the Exceptional Parent Magazine article that was published in the summer, 1997. I would like to thank Sigma Tau Pharmaceuticals for their support and providing these guides for our families.

I'm also enclosing a questionnaire on SIDS and Reye's Syndrome. If you get a chance, please complete and mail to Deb Gould at the Fatty Oxidation Disorders Network you can also complete it online. The next issue of the newsletter is due out in October. We will feature father's stories of their children feel free to contact me if you'd like to contribute an article.

## Metabolic Conference 2000, Boston, Massachusetts



*MMA parents, Doreen, Dix, her cousin, Margaret, Menta Pitre, Dana and Michael Dozier and Bernadette Ankenmann*



*OAA Members gather in Boston for Metabolic Conference*



*Dr. Vivian Shih, Dr. Richard Koch, Dr. Mary Ampola, Dr. Mark Korson answer questions at the Metabolic Conference in Boston*



*Terry Murphy and her daughter, April, age 24, MMA, spoke to families, also shown is April's daughter, Jennifer, age 8*

# Megan Ladwig

## *Glutaric Acidemia, Type 2, Age 2-1/2*



It has been one year since Megan's diagnosis of GA 2, and I wanted to share with you how things are going. As you may remember from our last story, Megan was left seriously delayed in all areas due to the effects of her undiagnosed GA 2. She is now two and a half years old. Megan, has made some wonderful strides in many areas including: she now eats and drinks all of her nutrition by mouth (her feeding tube was removed one month ago), she can get up without assistance from the floor, she can walk across grass and small rocks without assistance, she can climb onto low surfaces, she has enough strength to hold and use crayons, she is speaking in sentences and is very expressive now. She really enjoys character acting to her favorite movies, including The Wizard of Oz. Some of her favorite things to do are to play "house," read books, go to the playground, and anything outside. We are thrilled with her progress! Megan's suspected cognitive delay was not true, but was instead, a symptom of her being unable to move around and interact with her environment effectively. Now her limits remain primarily in gross motor strength, fine motor strength, and speech intelligibility.

A year ago, we were having trouble finding a pharmacy that would make the riboflavin suspension for us. The first pharmacist that agreed charged me \$40.00 for a small bottle only partly filled. I thought this was too expensive, so I searched further, and the next charged almost \$30.00 per bottle. Finally, with the help of one of the families that read our story, including my trouble getting riboflavin, I now get it through Sentry Pharmacy in Milwaukee for just \$5.00 a bottle! Thank you graciously for your suggestion.

Her dietician closely follows Megan's diet from the Waisman Genetics Center at the University of Wisconsin. We still calculate amounts and calories for each meal, as we have done her whole life, but now, we also pay attention to fat and protein grams. We are becoming more lax in calculating these things as Megan becomes better at reading her own body cues of hunger, satiation, etc. Along with typical baby and toddler foods, she also gets daily servings of Nutramigen (a baby formula), Rice Dream (a non-dairy drink with calcium), and cornstarch (mixed in her formula to drink just before bedtime). Getting Megan to eat and drink orally has been one of our greatest challenges. We feel so confident now that we have overcome that obstacle. Despite her history of severe feeding difficulties and her metabolic disorder, Megan's nutrition is now superior to that of most children.

In the last year, Megan has experienced two serious episodes of vomiting due to a virus. One of the incidents required hospitalization to get her stabilized, and the other episode Megan overcame with only the use of her G-tube and some Coca-Cola at home. I must admit, I fear for her getting sick, but I hope that as she gets older, she will be less susceptible to illnesses and vomiting.

We have enjoyed being a part of this network and reading all the family stories. Although we will never meet all of the families who share their stories, we feel a connection with every one of them.

Warm Regards,

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# Katie Clanton

## *Propionic Acidemia (PA), Age 20 months*

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My daughter Katie was born on September 19, 1998 and was diagnosed with Propionic Acidemia at a month old after twelve days at Children's Hospital. Since her diagnosis we have read everything we could get our hands on to learn more about her disorder. They most helpful and up to date information has come from the OAA Newsletter. My husband I were fortunate enough to be able to attend the 9<sup>th</sup> New England Connection Metabolic Conference and that has inspired me to write Katie's story.

Just as everyone story begins we had a normal pregnancy and delivery and was sent home with a beautiful 6 lbs. 4 oz 20 inches long baby girl. I had a planned C-Section but only because she was breech. When Katie went for her one-month check up with her pediatrician (her guardian angel) everything was fine except, even though eating fine she had lost 4 oz. He suggested that we feed her every three hours including waking her at night. The next morning he phoned me to see how she had done that night and she was still eating fine. He asked that I take her temperature and call him back. Well being a new mom I had to take it out of the wrapping first. As I begin to undress her to take her temp and noticed little purple dots all over her in very odd places like the tips of her fingers on the head, belly, arms. Her temperature came up 93.5 (five times). When I reported this to pediatrician he said to take her to the emergency room at Children's Hospital he would notify them we were on our way. Then the nightmare began.

When we arrived at the emergency room with Katie she was so lethargic that when they started the IV she did not even cry. We later found out that the little purple dots we saw was because her white cell count was one and they did not expect her to make it through the night. Katie went through every test in the world until eight days later they came with the news of her disorder. When Dr. S. Lane Rutledge, Associate Professor of Pediatrics and Neurology came in to Katie's room to explain this disorder to us she said " I hope you like me because I am now part of your family". Dr. Rutledge is the only doctor in the State of Alabama to treat children with metabolic disorders and her office along with Children's hospital are within twenty minutes from our home. Dr. Rutledge and her staff is in constant contact with us, especially Dr. Janet S. Isaacs and Tammy Thompson, RD, LD her nutritionist who always have plenty of suggestions (even on weekends).

Katie is now 18 months old and is developing right on schedule. We don't know if she will suffer any long-term effects from her initial crisis. She has been in the hospital twice since then with her ammonia level going up and just before the conference she became sick with bronchitis and stopped eating and drinking and had to go into the hospital for a few days. The beginning of April I am starting her in an early intervention program with music class and group time. I hope this will help her socially since she is never around other children.

We really enjoyed the conference and the opportunity to meet families in our situation. We came home with a better understanding of what life has planned for us. God has a lot of faith in all of us as parents of these children and I don't plan to let him down.

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# Phillip Jusuf

## ***Methylmalonic Acidemia, B12, Age 4 months***

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I would like if you could publish my story about my son Phillip who has MMA.

My son, Phillip, (now four months old) was diagnosed with MMA 5 days after he was born. He was born in Perth, Australia on the 2nd December, 1999. He was transferred to Princess Margaret Hospital for children after doctors found him be very sleepy, not feeding well, vomiting, unresponsive, unstable body temperature, and seizure-like activity. When he arrived at the hospital, he was in a coma, along with being dehydrated, low calcium, and low sugar levels. He was treated in intensive care. The next day, after several blood tests, doctors found out that he had MMA. At that time, his ammonia level was 1500 (normal level should be around 100), so they had to do a dialysis straight away to reduce the ammonia levels which were toxic to this body. His level decreased slowly and was normal (100 and below) after two weeks of treatment. During that time he was unconscious all the time.

He had IV tubes in all his four limbs and an additional oxygen tube through his nose.

After two weeks, he slowly opened his eyes and started moving his hands and feet. They started him on his special feeds and gave him medications to control his seizures and MMA condition. These included Phenobarb, Carnitine, Vitamin B 12 injection (0.1 ml) every other day, Calcium, and Pentavite.

He was discharged from hospital two weeks later. He was still very sleepy but willing to be fed orally (half orally, the other half through NG tube). His formula consists of S26 (the source of protein) and XMTVI (additional protein, but excludes the four amino acids which are toxic to his body). His condition progressed every day. He became more active and is able to smile. At first, he was not responsive to the B12 (which meant a more severe type of MMA), but when the doctors decided to increase his B12 injections to 1 ml weekly, he showed signs of responsiveness and his ammonia level was normal (now about 20). Now he has weekly injections of B12. His weight increase is monitored and protein intake is adjusted with his weight gain and age.

We are now living in Jakarta, Indonesia. There are no doctors here with MMA experience so we are still traveling back and forth (once in three months) to Perth. We keep in touch with his dietician by email. We see a physiotherapist to monitor his physical and mental development when we return to Perth.

Phillip's case is a miracle from God because doctors thought that he wouldn't survive. They prepared us for the worst when he was admitted to the hospital and told us that he had the severe case of MMA since he contracted it very early in life. Now, Phillip is growing like a normal, healthy child. He doesn't have an NG tube any more because he is feeding very well orally. He drinks between 120-150cc every four hours and his medications are calcium glubionate, phenobarb, and the B12 injections. Doctors have told us that children with this condition tend to sleep all the time and will not feed well, but Phillip is totally the opposite. At four months of age, he is talking ( "oohs" and "aahs" sounds) morning, noon, and night. Eating is not a problem because he gets hungry every feed and finishes the whole bottle. He sleeps only at night (from 10 p.m. to 7a.m.) and sleeps an additional hour in the afternoon.

Physically, he is developing well. His head is stronger and he can lift up his head for several minutes when put onto his stomach. He has discovered his hands and looks at them for quite a long time. His vision and hearing are both excellent. Last month we went to Perth to

monitor his condition. They said Phillip's development is 200% above their expectation. They never thought that he would be B12 responsive and they never thought he would develop normally.

I have read many cases on the internet, but have not found one story like Phillip. I read month-by-month developments of normal kids and what they should be doing around his age and I found out that Phillip is growing normally like other normal infants. I would appreciate if anyone knows of any recent developments, findings, or opinions about Phillip's condition, MMA. In Australia there are only 8 children with MMA, thus I have very limited resources and materials both here in Jakarta and Indonesia.

Do not hesitate to email me at [jtandean@hotmail.com](mailto:jtandean@hotmail.com). Thank you.

**Henry, Nerry and Phillip Jusuf**  
**Jl. Tanah Abang II/70**  
**Jakarta, DKI**  
**Indonesia**

# Cadence Pierce

## *Propionic Acidemia (PA), Age 4*

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Hi all,

As many of you already know, Cadence is almost four years old. The last year has been pretty uneventful, which is a rarity, and a very good thing. She managed to spend 14 months hospital-free and we are very glad of that. She did, however, end her streak the day before Valentine's Day. This had been one of the only two holidays that she had not been in the hospital for, and as everyone with a PA kid knows, they tend to go in on holidays. She had some severe, persistent vomiting (worse than usual) and became dehydrated very quickly. By the time we got her to the University Hospital, her pH was 7.18. Some of the doctors there who hadn't worked on her before were very worried at this result, but to those of us who know Cadybug, it was no sweat. Within 12 hours of being on IV fluids and Bicarb, she was sitting up in bed bossing the

nurses around.

We stayed from that Sunday night to that Friday afternoon, even though she was completely better by Tuesday. We ended up with a panel of very conservative doctors this particular time around, and they kept her over because they thought she may have had a blood Staph infection. It turned out not to be the case. Whatever it was, she was fine in short order.

Now Cadence goes to Preschool Special Needs two days a week and she just loves it. The bus comes by and picks her up and drops her off just like the big kids. She'd go seven days a week if we let her. She had to be evaluated, of course, for the program, and when the results came back it showed significant delays in all areas, averaging her at about a 30 month old level. To anyone who knows Cady, this is completely unbelievable. She doesn't like to be tested, so she didn't cooperate fully during the test. The testers took this as a delay instead of refusal to answer. All of the goals they set for her were things she's been doing at home for a long time. When she warms up to them (which I'm sure she already has) they'll find out how off-the-mark they were and have to reset the goals.

All in all it's been a pretty laid-back kind of year here at the Pierce house, and that's just fine by us. I would like to say I enjoyed the conference immensely and will always treasure meeting the other members of the OAA family. It is such a great thing, this organization, and we are glad to be a part of it.

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# Newborn Screening Update

## *Newborn Screening Awareness Month is September*

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How can you help save babies lives? By helping raise awareness for Newborn Screening! The OAA has joined together with many groups including the National Coalition for PKU and Allied Disorders, The Tyler For Life Foundation, The National Urea Cycle Disorder Foundation and many other non-profit organizations to help raise awareness. We have dedicated the month of September, National Newborn Screening Awareness Month. We will have lapel pins for sale during the months of June, July and August. The money for the pins was donated to the OAA from The Institute of Metabolic Disease at Baylor University Medical Center and all proceeds made will benefit the OAA. We'd like to ask you for your support by having you to sell as many pins as you can to get the word out about Newborn Screening, and the importance of it. The pins will come attached to a card explaining the cause and listing sites to get more information. The lapel pins are 1" in diameter and are set in a golden brass finish with the logo in red and white enamel. Please fill out the order form if you're interested in helping our cause.

### **ORDER FORM:**



Please send me \_\_\_\_\_ pins at \$3.00/pin

Total amount \$\_\_\_\_\_

Name: \_\_\_\_\_

Address \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Please make your tax-deductible check payable to:

The Organic Acidemia Association and mail to:

**Lori Sanchez**

**9376 W. Wagontrail Circle**

**Littleton, Co 80123**

**or email your order: [LoriSanchez@aol.com](mailto:LoriSanchez@aol.com)**

**or phone your order: (303)-933-3335**

**or FAX your order: (763)-694-0017**

## **ADVOCATING NEWBORN SCREENING**

If you don't have email, then you may not know about Tyler for Life Foundation. They are a new, newborn screening awareness organization in Georgia. I am on the board there as director of the Tandem Mass Spectrometry Disorders division, which means it's my job, with the help of others, to fix the problem of 3.7 million babies each year in the US alone not getting newborn screening with this technology. We plan to go international in a few years. Tragically, 2700 kids each year in the US alone die or are brain damaged because no one knew they should have a \$20 newborn screening test.

We can't do it alone! Please contact us to see what you can do to help educate the world and educate your community. The world has GOT to know newborn screening for many of these disorders EXISTS!

**Wendy Nawn, MCAD Mom – (610) 251-9876**  
**Tera Mize, Galactosemia mom, President**  
**Tyler for Life Foundation, Inc., - (770) 947-3638**  
**6340 Holborne Lane, Douglasville, GA 30134-4023**  
**[www.tylerforlife.com](http://www.tylerforlife.com)**

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## **HOW DO I GET MY BABY TESTED THROUGH CNBS?**

You can get a comprehensive newborn screening (CNBS) testing kit by contacting the following laboratories who offer tandem mass spectrometry screening to the general public:

**Baylor University Medical Center**  
**Phone: 1-800-4BAYLOR**  
**<http://www.baylorhealth.com/newbornscreening>**

**NeoGen Screening**  
**Phone: (412) 341-8658**  
**<http://www.neogenscreening.com>**

Comprehensive newborn screening tests can detect up to 30 disorders and can be performed on people of all ages, not just newborns. Adults can be screened as well through TMS screening. The tests are performed by a simple prick in the heel, with blood droplets applied to the special filter paper. When ordering a testing kit for an adult, request for adult specimen collection procedure instructions which varies slightly. Cost for the test is between \$20 - \$25.

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## **The National Coalition for PKU & Allied Disorders**

The National Coalition for PKU & Allied Disorders is a nonprofit organization composed of individuals, metabolic support groups and professionals directly involved with the issues related to inborn errors of metabolism requiring low protein diet, including PKU, MSUD, Homocystinuria, OA's, UCD's and Tyrosinemia.

The National Coalition is currently working on several projects to enhance living with metabolic disorders. We are in the works of organizing a national conference which will rotate around the country every two years. This conference will be a two day event with all

day breakouts for the individual disorders and the second day will have everyone gathered together in the main room to listen to speakers that have talks that apply to all of the disorders.

We are also working with the NIH to address ongoing issues such as newborn screening, treatment, and the need for medications and formula's to be available to those that are uninsured, fall under ERISA, or are financially burdened. Anyone wishing to be placed on the mailing list should E-mail [Coalition4PKUAD@aol.com](mailto:Coalition4PKUAD@aol.com) or write to the Coalition at P. O. Box 1244, Mansfield, MA 02048.

# Jordan Franks

## *Propionic Acidemia (PA), Age 3 months*

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*Ryan, Steve, Jill and Jordan (PA) Franks*



My name is Jordan Franks. I was born on January 28, 2000. I could see the pride and love in my parents eyes as they beheld what they believed was their perfect little creation - all 8 lbs. 14 oz. of me. Unbeknownst to them and the doctors and nurses who attended to me, I was afflicted with a rare genetic disease. No one understood the signs - vomiting after birth, disinterest in nursing, rapid breathing, and sniffly nose. I was sent home on the third day, Superbowl Sunday.

My mom tried feeding me and I just wasn't interested and acted like I didn't like the taste. How could she possibly know that the protein in the milk was poisoning me, causing elevated ammonia levels in my blood and acidosis. The next morning we visited the pediatrician and my temperature was 93.6 degrees and I was lethargic. I was down to 7 pounds 12 ounces and my doctor immediately contacted Evanston Hospital to inform them that we were on our way. After numerous labs and being hooked up to IV fluids, my parents were told I probably had a metabolic disorder. A what??? The doctors were able to get my acidosis under control; however, my ammonia levels went from 500 to 1050 and I was transported to Children's Memorial Hospital in Chicago for hemodialysis. After two catheter surgeries, they were finally able to perform the hemodialysis and get my ammonia levels under 300. I survived the procedure, but I was in a coma and hooked up to everything including a respirator. My parents were sad and confused and didn't realize the seriousness of my condition until the doctors came back with the diagnosis. I had Methylmalonic Acidemia, an inborn error of metabolism. My parents ran straight to the nearest computer to surf the net. Luckily, they found OAA.

Two days later, my diagnosis was changed to Propionic Acidemia. The high ammonia levels and acidosis caused swelling in my brain resulting in an irregular EEG and I was put on a therapeutic dose of Phenobarbital to protect me from seizures.

I was sent home at 3-½ weeks and started vomiting the next day. By early morning, I was breathing heavy so my parents took me to our local ER to find out that my ammonia was back to 300. Transport arrived to take me back to Children's Memorial. For the next three weeks of trial and error and fluctuating ammonia levels between 40 and 200, my doctor made adjustments to the formula. My formula consists of Similac w/iron, Propimex 1, Mead Johnson 80056, and amino acid solutions. I am getting 1.25 g/kg of protein per day. I am also on Carnitine, biotin, polyvisol, and iron.

Although I am only three months old, alert, active, smiling and cooing, I may be developmentally delayed. I have started batting at my toys and holding my head up. I receive speech therapy, occupational therapy, physical therapy and developmental therapy once each week. My prognosis for the future is uncertain. What is certain is that I will need constant medical care and therapy to maintain my condition. My story is a familiar one for children with metabolic conditions. One could say that my survival is a miracle. Perhaps the reason that I was destined to live is to be a voice for all the babies who have not yet been born. With newborn testing and early diagnosis, they will have an opportunity for the proper treatment and therefore a better quality of life.

On a lighter note, my big brother, Ryan, is 3-½ and constantly trying to stimulate me by giving me kisses and putting toys in my hands. My grandparents, great-grandparents, aunts, uncles and cousins have been incredibly helpful and supportive. My parents feel like they now have an extended family consisting of their new friends from OAA and are so grateful for all of the support. They have been told that the 1st year is the worst, but it will

get better. Every day they see me do new things and know I am a miracle and that it's important to cherish each moment and the miracle of life.

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# **Sick Days & Help Letters**

***(taken from the MSUD Newsletter)***

***by Dr. Rebecca S. Wappner,  
Professor and Section Director of Pediatric Metabolism***

**Riley Hospital for Children  
Indianapolis, Indiana**

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For organic acidemias, as with MSUD, when a patient becomes ill, the metabolic clinic staff should be contacted and the patient switched to a sick-day formula. The first day of a sick day diet is usually only protein-free formula. This formula (Protein-Free Diet Powder or ProFree) is given at about 18.5 calories per oz. We find that more calories per oz, can often cause diarrhea. A small amount of table salt and possibly some potassium will need to be added if Protein-Free Diet Powder is used. If any L-Carnitine and bicarbonate is taken daily, it is usually doubled.

Some clinics feel that the special medical food, low in the offending amino acid(s), should also be given. We have had problems when doing this the first day of a sick day plan for some patients with organic acidemias, especially the Methylmalonic and Propionic acidemias. We do try, however, to get as many calories in as possible from carbohydrates and fats, but not from protein. The special medical food protein should be restarted on sick day two or three in order to prevent catabolism.

The total amount of fluid taken is also very important to be sure that dehydration does not occur. Check with your metabolic specialist about the total amount they would recommend; this varies with the weight of the person. Zofran, Kaopectate, and Imodium-AD may also be helpful with viral gastroenteritis.

Parents should be taught to do home urine ketone checks and to do them with every urination when the child becomes ill. Drip feedings often are tolerated when bolus feedings are not. Or you may give smaller amounts every 1 or 2 hours. The rate of the drip feeding can be calculated by dividing the total day's volume of feeding by 24, Use this figure as the rate to give per hour.

As the child improves, first the special medical food mixture (Propimex, OS-1) and then the natural protein formula and foods are added to the intake slowly over a period of days. Optimally, the amount of increases should be figured out ahead of time and given to the parent as a chart, i.e., sick day 1, sick day 2, etc. with specific amounts of protein-free product, special medical food, natural food, total volume, etc. for each day. The chart needs to be updated as the child grows; it will change minimally once the person is a young adult.

Despite starting sick day formulas and plans early, sometimes we are unable to stop an episode of metabolic decompensation. Or, vomiting and/or diarrhea continue. It is now time to go to the hospital before things get worse. Every child with MSUD or an organic acidemia should have a "Help Letter" written by their clinic which the family carries with them at all times. This "Help Letter" should contain:

- Patient's name and date of birth.
- Diagnosis and a brief explanation of the diagnosis-short, clear, and just enough of the "scary" information to make the ER staff move.

Example: MSUD is a disorder of BCAA metabolism that results in elevated blood levels of the BCAAs-leucine, Isoleucine, and Valine. Untreated the disorder can result in vomiting, abnormal neurologic findings, an odor of maple syrup (from abnormal BCAA metabolites), hypoglycemia, acidosis, hyperammonemia, lethargy, coma, and

death. MSUD is treated with a special diet, low in leucine, using special medical foods and a limited amount of natural protein foods. Persons with MSUD are at risk for metabolic decompensation at times of decreased caloric intake, i.e., with flu, colds, fasting, or vomiting.

- Specific directions for the ER staff.

Example: *If patient's name* presents to you for emergency care, it is most important that you see her/him immediately. Blood should be taken for a Dextrostix, electrolytes with CO level, serum osmolality, and quantitative amino acids. Urine should be sent for urinalysis and osmolality. If she/he is symptomatic (vomiting, lethargic) do not wait for the results of the studies, but proceed with an IV with D5AV 1/2 normal saline and run it at a maintenance rate. Give 2 mEq/Kg sodium bicarbonate as a slow bolus over 20-30 minutes (dilute 1:1 with IV fluids). Watch carefully for signs of increased intracranial pressure; give Mannitol if pressure is present. If you call us *when patient's name* is in your ER, we would be most willing to assist you in her/his care and give additional instructions.

- Specific instructions for contacting the metabolic staff in charge of the patient.

Example: We can be reached by calling *Clinic's number* during working hours, or by calling *emergency number* after hours and weekends, and asking for *name(s) of person(s)*.

*For organic acidemias, we usually also give IV L-Carnitine 50 mg/kg times one, followed by 12.5 mg/kg IV every 6 hours. Some clinics use up to twice this amount. Families should carry supply of IV-L-Carnitine with them if they are traveling where there is no metabolic clinic or children's hospitals.*

Families should plan ahead when traveling in case an episode of metabolic decompensation occurs. Prior to a trip, you should:

- Make sure you have extra copies of the "Help Letter."
- Make sure you have supplies you might need if an episode of decompensation starts: Zofran tablets and Kaopectate, extra Isoleucine and Valine for MSUD, and a supply of IV L-Carnitine and protein-free powder for organic acidemias.

Ask your metabolic clinic for a list of the children's hospitals and other metabolic staff along your route. You may even consider driving a certain way, just to be closer to a metabolic clinic in case you need help.

# Leah Masten

## *Propionic Acidemia, Age 2*



Our daughter Leah has PA. She was born on November 5th, 1997. She is two years old now and at first glance appears to be a very healthy child. Leah was admitted into Dartmouth Hitchcock Medical Center two days after being born. After spending time at home we realized that breast-feeding was harder than we thought and Leah seemed very lethargic. We took her to our local hospital and realized something was very wrong. She was transported by ambulance to DHMC. We remember being told she was either severely dehydrated or she had an unknown disorder that they were testing her for. We just hoped she was dehydrated. We realized things were more serious when we had to leave her in the ICN. By Monday morning we had an idea of the seriousness and a name for the disorder, Propionic Acidemia. In our case Leah had a lot going for her. We brought her to the hospital before she slipped into a coma and the hospital had admitted a baby with the very same disorder a month before. We were able to meet the other family and it helped to know we were not alone. We met with Melody Jones and her daughter Anne Marie in Pediatrics. There wasn't a lot of information about this disorder and at first we were worried. But when we

learned that with a low-protein diet and regular monitoring of blood and urine she would grow up like a normal child, we were relieved. We were also told she could have developmental delays we were very concerned and wanted to know more. They told us "she will live a happy useful life." But that was all they knew and couldn't guarantee anything. Only time would tell.

We were released from the ICN after two weeks and went home for one night. The following day Leah had large ketones and we had to bring her back immediately. The next day she had a tonic clonic seizure and was put on Phenobarbital. She slept for five days right through Thanksgiving. Once she was stable, we were sent to Pediatrics. While there we worked through formula changes, medicine levels and finally a G-tube placement on December 31. On January 7, two months after her initial admission, we went home.

Soon after we had a regular routine that included weekly Early Intervention, the normal pediatrician visits, monthly blood and urine tests, two month appointments at HMC with her metabolic team and six month visits to Boston Children's Hospital. Leah had a hard time rolling over and held her head up late. She stopped drinking from a bottle at six months old and does not eat or drink much at all right now. She tried hard and walked at fourteen months. At a year and a half she could count to 10 (by herself) and almost say the entire alphabet. She never had another seizure and is not taking Phenobarbital anymore. She visits the doctors less now and has less blood work. She receives OT once a week and attends a regular babysitter four days a week. She loves to sing and is learning to ride her new bike. Developmentally she is above her age level. Leah has impressed everyone and continues to learn and thrive. Leah has a ZEVEX pump and we feed her a special formula consisting of XMTVI Maximaid, polycose and pediasure. She gets Carnitine 4 times a day along with biotin once a day, Lamotrigine twice a day and Dextromethorphan three times a day.

We still take life one day at a time and hope to help new families by sharing our story. Leah has a quiet, inquisitive disposition and seems very interested in learning new things and spending time with other children. Being our only child, she will be assured that she will have our fullest undivided attention. With the love of her family and friends and the knowledge of her doctors and the future of medication, not only Leah, but also all other children with these disorders will live a long and happy life.

Sincerely,

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# Justice Levi Quent

## *Isovaleric Acidemia, Age 3-1/2*



At two-weeks-old, my nephew lay in a hospital bed with tubes and monitors hooked up to him. Justice had stopped eating, lost weight and had a strange odor that smelled like dirty gym socks. Figuring out what was wrong with the little guy was difficult because it turned out to be Isovaleric Acidemia (IVA), a rare metabolic disorder.

Because of IVA's rarity, many doctors haven't had any exposure to it. This lack of exposure can lead to a delay in diagnosis or even a misdiagnosis. There have been cases originally thought to be Reye Syndrome that were later found to be IVA. Some cases of near SIDS (Sudden Infant Death Syndrome) have also been related to metabolic disorders.

We were relieved to finally know what was wrong with Justice, but terrified because we didn't know anything about metabolic disorders. We had lots of questions, starting with: Exactly what is Isovaleric Acidemia?

IVA is a hereditary disorder that keeps protein from properly breaking down in Justice's system. The way it works is protein gets broken down into leucine (and other amino acids), which then breaks down into isovaleric acid. IVA is caused by an enzyme that isn't working right, so the isovaleric acid doesn't get broken down properly. This causes the isovaleric acid to build up in Justice's body, which can affect his brain and nervous system if left untreated. The results can be retardation, loss of motor skills, seizures, coma and eventually death, making early diagnosis and proper treatment essential.

This information did little to alleviate our fears; instead it prompted more questions like: How did Justice get IVA?

Everyone has two sets of genes: one set from their mother and one set from their father. Genes are like written instructions. And sometimes within these instructions there is a typo or error, called a mutation. Justice received, from both his parents, a mutated copy of the gene that makes the IVA enzyme, which left him without a fully functioning set of genes. The result was IVA. For parents who both possess this mutated gene there is a 25% chance, with each pregnancy, that the baby will have IVA.

Our next question, and certainly not the least important, was: Will Justice be okay?

IVA is a lifelong treatable disorder and outcome varies from one person to the next, but with early detection the prognosis improves. Because IVA isn't outgrown, Justice will be on a lifetime diet of low protein foods along with a specialized formula.

The formula will give Justice the protein and amino acids he needs, without the leucine. Limiting Justice's leucine intake limits the production, and subsequent build-up, of isovaleric acid in his system. But Justice still needs help ridding his body of extra isovaleric acid. For this, a supplement of carnitine, glycine, or a combination of both, can be used. In Justice's case, he's doing well on carnitine alone.

Carnitine helps produce muscle power. Isovaleric acid bonds to both carnitine and glycine, like metal to a magnet. The isovaleric acid is then converted to a less harmful compound, which is flushed out with urine.

Because our bodies release stored proteins when we're sick, common illnesses can cause Justice's isovaleric acid levels to rise. So we have to take extra precautions in protecting him against normal childhood illnesses like colds, flu and infection.

But when Justice does get sick, we can cut or omit protein from his diet and supplement with higher carbohydrates (foods high in sugar) to help slow the release of stored proteins. In addition, Justice's carnitine dosage may need to be increased.

We always have to be watchful for signs of an acute attack, but what are we watching for?

The symptoms of IVA can vary. But the typical symptoms are lethargy (sleeping more and becomes hard to wake up), loss of appetite, vomiting and the distinct smell of dirty socks. The "dirty socks" smell is caused by the build-up of isovaleric acid.

This sounds gloomy, but there are a few bright spots too.

First, in recent years a lot has been learned about metabolic disorders. There's ongoing research in gene therapy that holds great promise for the future treatment of IVA and other metabolic disorders.

Then there's the testing. IVA can be tested for prenatally or with expanded newborn screening. This expanded screening, done by Tandem Mass Spectrometry, can detect over 30 metabolic disorders, but it's only being done in a couple of states right now. However, it is available to the other states through Neo-Gen Screening, a private lab in Pennsylvania.

One of the biggest problems surrounding the testing is a lack of awareness. Because the testing is relatively new, and the disorders it detects are rare, even your doctor may not be aware that it's available.

Another problem is most insurance companies don't cover the cost of screening for metabolic disorders, because of that pesky "rarity issue." Yet the screening is fairly inexpensive, around \$25.00, and worth every penny when faced with the heart-wrenching alternatives.

If Justice would have had the additional screening his acute attack could have been prevented. This early screening along with proper treatment reduces the risk of complications associated with IVA, like retardation and sudden death.

But today, at age three and a half, Justice is pretty much like every other kid except for the specialized diet, formulas, medications and lifetime monitoring by health care providers. He's smart, has good motor skills, and talks up a blue streak. Because of his diet he's at the low end of the "normal growth range." But that doesn't stop him from trying to rule the roost with that welcome affliction known as the "terrible toddler stage."

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**Terilyn wrote this article for a class and has a bibliography and references to articles including many from previous newsletters. If you're interested in obtaining a copy, please contact either Terilyn or Kathy Stagni.**

# Lori Smith Cools

## *Propionic Acidemia (PA), Age 24*



Hi! My name is Lori L. Smith Cools. I am twenty-four years old, born on December 20, 1975, in Ada, Oklahoma. I too have Propionic Acidemia and was diagnosed at two months of age. At that time my pediatrician was Dr. Jerry Cravens who referred my parents to Dr. William Nyhan in San Diego, California. Dr. Nyhan is still my Doctor today. I have been back a few times to visit and so he could see how well I have progressed.

Like many stories I have read, as an infant I was very lethargic and was unable to hold down food. I was in the hospital most my child hood life until I was six years old. As a very small infant I was fed through an NG tube however, Mom and dad were determined to get me to eat on my own. As a baby she would mix together special formulas in my bottle but as I started getting older Mom prepared daily menus that I could choose from of foods that I liked to eat. Weighing and measuring everything I ate, these menus would total half my body weight in protein. I was very limited to exercise because I would burn too many calories causing me to become very ill. As a child, after recess I

would go to the nurses office and drink a cola and eat a candy bar to replenish the calories that I burned.

As a teenager I turned away from my medications and diet, eating without monitoring my protein and calorie intake. However, I have been feeling weaker and believe it is now catching up to me. Mom is going to work with me and teach me all over again how to control my diet.

Most of the time I feel fine. However, I often get very bad migraine headaches and sometimes stomach pains. I eat most anything but sometimes I will gag or have problems holding down some foods.

I have been sticking with a low protein diet and high calories. Some of the low protein foods I eat consist of: rice cakes, vegetables, fruit, pasta and I am always eating rice. I get protein from foods such as: Bacon, Chicken, Peanut Butter and even though I can't stand the taste, I have begun to drink a small glass of milk a day. For calories, I am forever drinking Coke, Gatorade and eating a lot of snack foods. I am currently 5'4" and weigh 103 lb.

I have led a pretty normal life growing up. I sang in the Tucson Girls Chorus, my high school advanced chorus, and sang a lot in church. I received my high school GED in 1996 and went on to Business College graduating with a B average. A previous job I had was at a drug store in Ohio. There I was a supervisor and worked with cosmetics, resets and customer service. I am now a stay at home housewife. On February 26, 2000, I got married to my husband Bryan Cools. He is in the U.S. Army. We currently live in Tucson, Arizona. We will, however, be moving soon depending on where he will be stationed. I have been sharing with him about my disorder and he is very interested in learning all that he can.

My family all lives in Arizona also. My parents are Hicks and Debbra Smith, and I have a brother, Bubba who is two years older than I am. He is very healthy and so far has not shown any signs of Propionic Acidemia. He is married also and has three children.

We presently do not have a computer but in the future hope to soon. We would love to hear from anyone out there with PA or from parents with children that have it. This is my brother's Email Address and email can be sent to his address and he will forward it to me. You can also write to us at our home address.

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# Samuel Boover

## ***3-Methylcrotonyl-CoA Carboxylase Deficiency (3-MCC), Age 3-1/2***

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It started out as any other Sunday morning. My husband and I were rushing to get ourselves ready for church. It was already nearly 9:30 a.m. and our then 15 month old son, Sam, was still asleep in bed.... or so we thought. He had gone to bed later than usual, so I assumed he must still be tired. My husband went in to get him from his bed. The next thing I remember is my husband's panicked scream. I ran to Sam's bedroom to find him soaking wet from sweat, freezing cold, blue lipped, and completely non-responsive. He looked dead, except that he was breathing. We grabbed a blanket and rushed him to the emergency room. Everyone was baffled. They kept asking me if I had shaken him, or if he had hit his head. After a CAT scan, sticking him with needles, and taking what seemed like too much blood from such a little one, someone came in to tell us his blood sugar was low, and that they would be giving him some glucose. I felt so relieved. I thought they would take care of that problem and send us on our way. This wasn't the case. We were told Sam's liver was enlarged, his liver enzymes were elevated, and his white blood cell count had sky rocketed. He would be admitted to the hospital. After four days there, and assuming the necessary tests were being done, we were discharged. Our pediatrician at the time said this had been a "freak accident and shouldn't happen again, sending us on our way. My mother's intuition kicked in. I knew she was wrong. I thought back to those first days of Sam's life and how he had such a hard time eating. He refused to breast feed. Sadly, we started him on formula, which he projectile vomited across the room. I immediately called our pediatrician, only to be told he probably had reflux, and to add some rice cereal to his bottle. It did seem to help with the projectile vomiting, but he did seem to throw up more than what seemed usual to me. He also had never seemed to have regular bowels. I had brought this up to my pediatrician, but she would dismiss that too, saying it was just his diet. With all these thoughts running through my mind and the emotions of having seen my small, helpless, precious baby in this scary, near death position, I told my husband I felt we needed to change pediatricians. The doctor, Dr. Ted Sigrest, who had been on call at the time we arrived at the hospital, was wonderful. He seemed to want to solve this "mystery". We started seeing him. He regularly checked Sam's liver enzymes and blood sugar. Everything seemed fine. Eleven months later, out of the blue, Sam had another "episode". I again rushed him to the ER. Dr. Sigrest saw him later and ordered a full metabolic screen. We, along with Dr. Sigrest, assumed this had been done the first time this had happened. It had not. After about a week, three days before Mother's Day of last year, we received a diagnosis for Sam, 3-Methylcrotonyl-CoA Carboxylase Deficiency. The lab that read the test thought these labs had come from a deceased child. This sent chills down my spine. I had never heard of such a disorder. I got on the Internet that weekend to see what I could find. One of the first things I stumbled upon was the OAA website. I joined immediately. I felt I had gained a little more control over this helpless, and at the time, hopeless feeling situation. Prior to this, I had felt completely scared and alone. We didn't know what lie ahead of us. An appointment with a geneticist in Jackson, MS was scheduled for first thing the following week. Until that time, we were given instructions on his diet, and he was started on Carnitine. We now meet with Dr. Georg Bach, a geneticist at University Medical Center in Jackson, MS and our nutritionist, Teresa Carithers about every 3 months now, although we touch bases via telephone if we need anything. Sam is on a low protein diet (15-18 grams daily), supplemented with Valex-2 three times a day with meals. He takes 4ml of Carnitine 4 times a day. He also receives 500mg Calcium daily. Developmentally, he seems to be right on track. It has been almost one year since Sam was diagnosed. We have come a long way. In March of this year, my husband and I were able to attend the Metabolic Conference in



Massachusetts. This was a highlight for us. I felt like I came out of the dark in a way. I met Dr. Vivian Shih from Massachusetts General Hospital, who had worked with a 3-MCC patient. She and I have corresponded several times since then. I also had the opportunity to sit and talk with Dr. Harvey Levy of Children's Hospital in Boston. He gave me some new insight and valuable information. Although we have not yet met or talked with anyone who has 3-MCC, I am connecting with many more parents and families in similar situations. My heart is often touched by their stories and experiences.

I am also now an advocate for newborn screening in my community. I am passionate about this cause. We have a daughter, Madeline, 18 months old, who does not have 3-MCC. She was tested at UMC the first time we saw Dr. Boch, after we had received Sam's diagnosis. We are awaiting the arrival of a baby boy in July. We look forward to having him tested using tandem mass spectrometry. We pray that all will be well with him. But all is well with our family, despite our challenges. I probably couldn't have said that even 4 months ago, but like I said, we have come a long way. I believe Sam is truly heaven sent, a gift from God. I look at each day differently than I ever did before. I must admit, my heart drops on mornings he hasn't darted through his door by 9:30 a.m., and we get a little nervous when he gets sick and just wants to lie around, but I count my blessings and give gratitude daily. I have a wonderful ally, Dr. Sigrest, my pediatrician, who I also consider a friend. He has helped us through a few scary small situations during this year. We also know we can count on Dr. Boch and Teresa any time we need them. I also thank each of you for the stories you have shared. During this year, I have looked forward with much anticipation to my OAA newsletter. I have been able to lose myself in the emotions and love that are involved in these experiences. My heart goes out to each of you who are challenged in many more ways than our family, many of you who have lost your little ones. It is my hope that this will stop. It is my hope that we can unite together to inform and educate others. We truly are all in this together. Feel free to email or call us. We love getting together to chat with friends.

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# Propionic Acidemia Q&A

*by Dr. Alan Greene*

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## Question:

Some friends of mine recently had a baby who was diagnosed with Propionic Acidemia. Apparently this means that the baby cannot digest protein. The parents have talked with the doctors extensively about what they can do to help at home, life expectancy, etc., but they are consistently told that all cases are different and there's no way to know what to do. Apparently it comes from a mutated (or recessive maybe?) gene that has to exist in both parents for the disease to appear in the child. I don't think children with this disease live very long, nor do they develop mentally like healthy children. I think the oldest living person with the disease is 18. Any help you might provide would be greatly appreciated. Thanks in advance for your time.

**Alli**

**Stockton, California**

## Answer:

Propionic acidemia can be a devastating condition, but with careful treatment it is sometimes possible for people with the disease not only to reach adulthood successfully, but to even get pregnant and deliver healthy babies!

But for parents whose children have propionic acidemia, the first weeks after the symptoms appear seem like a surreal nightmare. Rather than little bundles of joy, or fussy bundles of colic, these children are floppy and weak. Most often the children get increasingly lethargic and don't have those wonderful quiet alert moments where baby and parent can connect. Not even feeding is a comfort, with vomiting and poor growth a common feature. Often no one knows what the problem is, but without quick intervention, the situation can deteriorate quickly to seizures, coma, and death.

And when the diagnosis is finally made, the situation can sound even more bleak than the previous fears of the unknown. A nightmare indeed!

But a new treatment on the horizon may turn out to be a dream come true.

Propionic acidemia is what we call an inborn error of metabolism. Our bodies use detailed blueprints (our genes) to guide the manufacture of the proteins and enzymes we need to carry out the processes of life. Errors in these genes can lead either to the lack of necessary proteins or to the accumulation of toxic substances.

Most mutations in these genes cause no problem; they are just differences that set individuals apart. But more than 100 known single-gene changes do produce disease. Each of these inborn errors of metabolism is rare, but taken as a group the conditions are fairly common. They range from very mild to quite serious. Even some of the worst can be successfully treated with something as simple as a dietary change. Others are relentlessly fatal.

Some of my most heart-rending experiences as a physician and as a friend have been watching the devastation caused by inborn errors of metabolism.

Inborn errors of metabolism should be suspected (and often aren't) in any child with persistent vomiting, failure to thrive, lethargy, abnormal muscle function or tone,

unexplained seizures, neurological deterioration, or developmental regression – especially in the absence of obvious congenital anomalies. A family history of a similar condition, a peculiar odor, or physical changes such as a large liver or spleen should also lead one to consider inborn errors.

There is a far better way than waiting until kids are sick enough to have symptoms. I wish all families took advantage of the new, inexpensive screening tests for inborn errors [link].

Propionic acidemia is an error in protein metabolism. Every time we eat food that contains protein, our bodies use a series of enzymes to break those huge foreign protein molecules into small pieces. These then become the building blocks we reassemble to form the specific human proteins we need.

In propionic acidemia, there is an insufficient supply of one of these enzymes (propionyl CoA carboxylase). Without the propionyl CoA carboxylase, there is a bottleneck in protein processing. Propionic acid builds up in the blood. This is known to damage the lining of small blood vessels, allowing the propionic acid to leak into the brain and nerve tissues, where it alters behavior and development. Ammonia also accumulates in the blood. This too can damage the brain. Food that is meant to nourish becomes a poison.

Propionic acidemia is really more than one disease, depending on the extent of the enzyme deficiency. In some people, the defect is complete, with the early onset of severe symptoms. At the other end of the spectrum, one man had such a mild deficiency that he didn't develop symptoms until he was 31 years old!

There are now 53 known different mutations to the propionic carboxylase gene. As our understanding of genetics accelerates, I expect that soon we will be able to make precise correlations between the specific genetic defect and the expected clinical course. Even now, though, we can tailor treatments to individual children, while recognizing principles that apply to most children.

In general, those with intermediate levels of enzyme deficiency have symptoms that come in separate attacks when levels of protein to be digested are out of balance with the amount of enzyme available. This might be from high protein feeding increasing the protein to be digested, or with stress or illness decreasing enzyme production. Constipation can also trigger an attack because it increases dietary protein available for processing and because gut bacteria can produce additional propionic acid. These attacks can spiral downward rapidly, because the vomiting child with poor appetite, desperate for calories, will begin to process his own protein for food, leading to increasing levels of acid.

Laboratory findings during the acute attack reveal excess acid in the blood, low white blood cells (neutropenia), low platelets, and low blood sugar. Ammonia also accumulates in the blood. The level of ammonia often correlates with the severity of the disease, so this is measured to design and monitor treatment.

Treatment of acute attacks includes rehydration, correction of acid-base balance, and provision of adequate calories, often through IV feedings. Minimal amounts of protein should be given, and this protein should be deficient in the four amino acids that need propionyl CoA carboxylase to digest them (isoleucine, valine, threonine, and methionine). To control the possible production of propionic acid by intestinal bacteria, an antibiotic (such as metronidazole) should be started promptly. Constipation should also be treated. Patients with propionic acidemia may develop carnitine deficiency, presumably as a result of urinary loss of propionylcarnitine. Administration of L-carnitine may be necessary to stop the attack.

Very ill patients with severe acidosis and elevated blood ammonia require dialysis to remove ammonia and other toxic compounds. Although infants with true propionic acidemia are rarely responsive to biotin, this compound should be administered to infants during the initial attack. It is very important in treating other errors of protein metabolism that look very similar.

Long-term treatment includes a low-protein diet (1.0-1.5 g/kg/24 hr). Synthetic proteins deficient in key amino acids (isoleucine, valine, methionine, and threonine) is used to increase the amount of dietary protein (to 1.5-2.0 g/kg/24 hr) while causing minimal change in propionic acid production. Still, natural proteins should comprise most of the dietary protein (50-75%).

L-carnitine supplementation (50-100 mg/kg/24 hr orally) is also a part of long-term treatment. And thiamin deficiency has been shown to make propionic acidemia worse. Early vitamin supplementation is a good idea for these children – and especially when having an attack.

We used to think that the mental and developmental problems were solely a result of damage done during attacks. Recent evidence, however, suggests that there may also be damage occurring even in the absence of attacks. Head MRI (which shows brain structure) and PET scan (which shows brain function) can be useful for following any silent progression of the disease.

Close monitoring of blood pH, amino acids, urinary content of propionate and its metabolites, and growth curves is necessary to adjust the proper balance of the diet and ensure the success of therapy. Some patients may require chronic alkaline therapy to correct low-grade chronic acidosis. Also, children with propionic acidemia are especially prone to infections. Any infection should be treated promptly.

With this type of regimen some children do quite well, but treatment must be continued for a lifetime with conventional therapy. In two known cases, the parents believed their children to be cured. They abandoned cumbersome diet and medications, resulting in the sudden death of both children.

Long-term prognosis is guarded – especially in those who develop symptoms in the first week of life. Seizures occur in about 30% of affected infants. Survival has been improving dramatically in recent years, but death may still occur during an acute attack. Normal development is possible, but most children do have some degree of permanent developmental deficit.

Strictly following a diet tailored to the child tends to improve results. But even apart from diet, outcomes vary considerably. In one family, a brother was diagnosed at 5 years of age, whereas his 13-year-old sister, with the same level of enzyme deficiency, had no symptoms at all!

The great news is that truly curing this disease -- not just treating it -- may be around the corner! Last year, a gene therapy trial began for people with OTC, a closely related inborn error of metabolism. Like propionic acidemia, OTC makes the protein that should fuel growth into a dangerous, toxic substance. OTC robbed the lives of 4 sons of dear friends of mine.

In gene therapy a child is given a virus that inserts the missing gene. During the fall, the 18th patient in the OTC gene therapy trial, Arizona teenager Jesse Gelsinger, died suddenly and without explanation within days of getting the virus carrying his missing gene. It was the first known death linked to gene therapy. I'm saddened by the loss. I also salute the pioneers that participate in clinical trials. Their action advances the cause of health for all of us. Most of the OTC families are eager for the trial to continue.

In the laboratory, gene therapy for propionic acidemia has already worked. The hope is bright that within a few years the defect may be curable in humans. Successful gene therapy will not reverse brain or nerve damage, but can stop any further damage from occurring – giving the child a chance to grow unfettered. Coupled with important advances in early diagnosis – possible now even before a baby is born – the potential is huge. And I fully expect to see this future while your friend's baby is still a child.

**Alan Greene, M.D.**

*Note: One good place to look to learn about ongoing clinical trials is [www.nih.gov/health/trials/index.htm](http://www.nih.gov/health/trials/index.htm). This is NIH's one-stop shopping area for information about clinical trials. Here you can access several databases containing facts about both public and privately supported clinical studies. Some of these studies are open to new participants while others have already completed enrollment.*