



PFIC.org Newsletter

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What is a Child Life Specialist? By Shay Pool, CCLS

A Child Life Specialist (CLS) is a professional who is specially trained to assist children and their families in understanding and managing the hospital experience. They offer educational, developmental and therapeutic interventions to help reduce stress and anxiety while promoting positive coping skills. In the past, it was more common to find Child Life Specialists in the hospital setting; it is now more common to find them in pediatric and dental offices, outpatient clinics, counseling clinics and any other environment that includes a pediatric population.



A Child Life Specialist promotes optimum development of children and their families by attempting to maintain normal living patterns and to minimize psychological trauma. Child Life Specialists provide many services throughout the hospital setting and are part of a multidisciplinary health care team. Some of the services a Child Life Specialist provide are:

- Age and developmentally appropriate preparation for patients prior to tests, procedures and surgeries.
- Comfort and support for patients during tests, procedures and surgeries.
- Open communication that enables patients to share information about illness or injury.

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actual medical equipment as a way of learning the hospital environment. This permits patients to act out their feelings and concerns while alerting the CLS to any misconceptions they might have.

- Sibling support
- Diagnosis resources
- Activities to continue normal growth and development of infants, children and adolescents in patient rooms and/or play areas.

Play is the primary model of a Child Life program, allowing the health care experience to be less intimidating and more comfortable. Child-directed play and guided play let the child be active and exert control over their specific situations. A CLS often uses medical play to help a child cope with painful treatments and invasive procedures. Such play activities allow a child to approach a threatening situation with a greater sense of mastery and familiarity.

Preparing children for hospitalization, clinic visits, and/or procedures is another important element of a Child Life program. Preparing children helps familiarize patients and their families with procedures and circumstances they will encounter. Developmentally appropriate preparation helps reduce emotional disturbances in hospitalized children. During a procedure, a Child Life Specialist can enhance a parent's ability to support their child and can help keep the patient calm and more cooperative.

Education and support of parents, siblings and caregivers is an important aspect of an effective Child Life program. Since anxiety experienced by parents and siblings can be transmitted to the children receiving treatment, frequent contact from the CLS helps build rapport and therapeutic relationships. It also helps the Child Life Specialist monitor family stressors and reactions to events. A CLS help parents understand their child's response to treatment by providing age-appropriate explanations for their child and inform parents of basic developmental reactions to hospitalization.

Child Life Specialists support a philosophy of family-centered care in health care facilities and contribute to the multidisciplinary health care team. They can provide vital information to not only patients and families but also to medical staff, social work, nursing and dietary. Child Life programs have become the standard in pediatric settings to help address psychosocial concerns that accompany hospitalization and other health care experiences.

Caden- My Special Gift

by his Mom Christi

The name Caden is "one who brings joy." This is exactly what Caden did; he brought us so much joy. The joy was bitter sweet. On December 31, 2004 I heard the words Biliary Atresia. Not knowing what this was, I asked about the treatment and what they were going to do for him. Then I heard other words I thought would never enter in to my life "liver transplant"

On January 6, 2005, Caden had his first surgery. It was seven



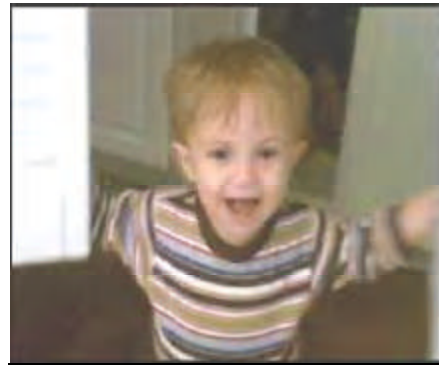
hours talk about a long day, one of the hardest days of my life. They gave the surgery a fifteen percent chance of working, and this would only buy us time to let Caden grow. After four weeks it was apparent that the operation called a Gallbladder Kasai was not working.

On February 15, 2005, Caden underwent his second operation a traditional Kasai. The very next day we had a good change in stool color and I had a pink baby, not a yellow one!

Then in December of 2005, Caden's health started to deteriorate. The original transplant team we were seeing in Cincinnati didn't think Caden needed to be listed but I and Caden's hepatologist did. I asked to get a second opinion in St. Louis.

St Louis put Caden on the transplant list in March 2006. He was also given a different diagnosis of PFIC. The PFIC diagnosis explained why his liver was getting so sick so fast. To confirm the diagnosis we sent his biopsy slides to King's College Hospital for genetic testing. We believe it to be a PFIC type 3 but aren't sure yet.

Then on Saturday April 15, 2006 I got the call. There was a donor for Caden and away we went! Caden received his gift of life on Easter Sunday. What greater day for my son to get new life than today when our Savior arose and gave us new life.



After transplant we have had some problems. Including a trip back to St Louis for an emergency surgery. I had taken Caden on the early flight that morning back to St Louis. I had no idea at the time how time critical that flight was. By the time we reached the hospital, Caden had started having convulsions because the fluid was pressing on his heart and lungs. The emergency surgery drained one liter of fluid and they put a drain tube in.

Caden is doing better today although we are still in St Louis. Today Caden gave me his silly shocked look he gives and smiled and went back to sleep. I am praying his drain will be removed soon and we can go home. We believe he will have a bile duct stricture and will have to have stents for the next year in hopes of maintaining an open main bile duct that will be fine.

Happy Birthday Zoe



Zoe will be 9 years old on July 9th.



The Tx Games and a very special Anniversary By Their Mom Susan



Gilbert and Gabby both have PFIC and both were winners in the Transplant Games . But that wasn't their only reason to celebrate. Gilbert was also celebrating his 6th year transplant anniversary.

"Gaby was the youngest athlete at the games this year. She got to go on stage at the opening ceremonies and recite the athlete's oath with the oldest athlete who was 85. Both kids competed in the 50m dash, long jump, softball throw and 1k cycling. Gaby received 3 medals and Gilbert 1 medal. They had a great time meeting up with some of their liver friends.

The games are such a wonderful experience. Watching your kids compete is unbelievable! Seeing your kids give their all and knowing that they can is reward enough!" by Mom Susan

Indoor Kid Fun-Coffee Filter Flowers

A friend at work mentioned these and what fun they are to make. I thought them a perfect solution for a bored child in the hospital. Most of the supplies you can find in any break room.

You will need :

Paper basket style coffee filters

Crayons, markers or paint to decorate the flowers

Drinking straws (or wooden popsicle sticks) for the stems

Tape

Scissors



Decorate your coffee filter with crayons, markers, or paint. Once decorated fold the filter in half to make a half circle. Fold again to make a quarter pie shape. Fold once more so you have a wedge. Cut a curve around the wedge 1/2 inch from the wide end. You can also cut semi-circles or ziz-zags edges to make the flower edge different shapes. This will be your flower.

Poke the drinking straw through the center of the circle and slide it all the way through leaving one-half inch in the flower. Twist the bottom one-half inch of the flower around the straw and tape to hold tight. Push the petals down adjusting them until you are happy with the way they look. Leaves can be cut from other coffee filters and taped to the stem. A word of caution, if you are making these in the hospital, do not take the last coffee filter out of the break room...LOL. These are great to share.

Defining PFIC

By Robin Marceca

I can not count the number of times we have gone to a new ER or to a new clinic knowing as part of the medical history we will have to explain in detail what PFIC is and isn't. This always seemed to lead to a conversation of misunderstandings.

Even though Anna is transplanted now, because PFIC is genetic, she will always carry PFIC type 2 diagnoses. This means I will have years to perfect my communication skills when it comes to defining PFIC. I began to think there has to be an easier way.

That is when I decided to create the PFIC definition cards. These cards are available to be printed from the PFIC.org web site, or you may e-mail and request I mail some to you. Several of our CLiC doctors worked on the definitions for us. There is a card for each type of PFIC. The cards have a definition and two reference websites. The idea is that the cards can be printed and put in your wallet. Then when visiting a new clinic you can give the card out as you would give out a business card. Hopefully by having the card the doctor will be able to skip asking detailed questions about what PFIC is, and go straight to the clinical history and treatment of your child.

PFIC (Progressive Familial Intrahepatic Cholestasis) Type 1

PFIC-1 is characterized by a mutation in FIC-1, a gene predicted to encode a P-type ATPase that may be involved in phospholipid translocation. It was previously identified as a clinical entity known as Byler's disease. Patients with PFIC may have severe cholestasis manifest by intense pruritus, fat malabsorption and fat soluble vitamin deficiencies. PFIC-1 may be associated with extrahepatic manifestations, especially after liver transplantation, since the FIC-1 gene is expressed in many tissues other than the liver.

For Additional information:

Cholestatic Liver Disease Consortium (CLiC)

<http://rarediseasesnetwork.epi.usf.edu/clic/learnmore/pfic.htm>

<http://PFIC.org> A resource for parents



Anna M. holds a plastic liver .

PFIC (Progressive Familial Intrahepatic Cholestasis) Type 3

PFIC-3 is caused by mutations in the MDR3 gene, a flippase that moves phospholipid to the outer leaflet of cell membranes permitting biliary excretion. Without functional MDR3, bile is deficient in phosphatidylcholine and abnormally caustic. This damages hepatocytes and bile ducts. The abnormal bile also is prone to form gallstones.

For Additional information:

Cholestatic Liver Disease Consortium (CLiC)

<http://rarediseasesnetwork.epi.usf.edu/clic/learnmore/pfic.htm>

<http://PFIC.org> A PFIC resource for parents

PFIC (Progressive Familial Intrahepatic Cholestasis) Type 2

PFIC-2 is caused by mutations in the gene that codes for the bile salt export pump, or BSEP. Hepatic excretion of bile acids is primarily controlled by BSEP, so severe cholestasis is common in patients with BSEP disease. As BSEP is expressed only in the liver, extrahepatic disease in PFIC-2 is secondary rather than primary.

For Additional information:

Cholestatic Liver Disease Consortium (CLiC)

<http://rarediseasesnetwork.epi.usf.edu/clic/learnmore/pfic.htm>

<http://PFIC.org> A PFIC resource for parents

Genetics of PFIC: Current Status and Implications

By Laura Bull, Ph.D.

Associate Professor, Department of Medicine

University of California San Francisco Liver Center Laboratory

San Francisco General Hospital

My primary expertise is in human genetics. I have a research laboratory in the UCSF Liver Center. For the past decade, most of my work has focused on use of genetic and related approaches to understand the causes of cholestasis, including PFIC.

In this article, I will try to provide an overview of our current understanding of the genetics of PFIC, based upon our work and that of colleagues in the field. I will also indicate some of what still remains unknown, and finally, discuss some of the ways in which knowledge of the underlying genetic causes of PFIC can help in the quest to better understand PFIC and improve treatments.

PFIC can be divided into 2 broad categories: 'Low-gGT PFIC,' in which serum activity of gamma-glutamyltranspeptidase is usually low or normal, and 'high-gGT PFIC,' in which the activity is above normal. In my laboratory, we have focused our studies to date on the low-gGT form of PFIC, and especially on FIC1 disease (see below), so that is my area of greatest expertise.

Low-gGT PFIC

Some patients with low-gGT PFIC carry mutations in FIC1 (also called ATP8B1), while others carry mutations in BSEP (also called ABCB11). In other patients, we have been so far unable to detect any mutations in either of these genes. For some such patients, genetic studies indicate that their disease must be due to mutation in a gene other than FIC1 or BSEP, although we don't yet know which gene; it thus seems clear that there is at least one (and maybe more) 'low-gGT PFIC gene' that has not yet been identified.

an aside

For some patients in whom no mutations in FIC1 or BSEP are detected, too little genetic information is available, so we can't say for sure whether they may have mutation(s) in one of these 2 genes that are just hard to detect, or whether they may have mutation(s) in the as-yet-unidentified gene(s). Some types of mutation are easier to detect than others, and in fact, some proportion of possible mutations would not be detectable at all using the techniques that are currently standard for such studies; detection of such mutations would require much more labor-intensive and expensive studies.

High-gGT PFIC

Some patients with high-gGT PFIC have mutations in MDR3 (also called ABCB4), while in other such patients, the genetic cause of disease is unknown; there may well be at least one more 'high-gGT PFIC gene' to be identified.

Some reasons why genetic studies are useful

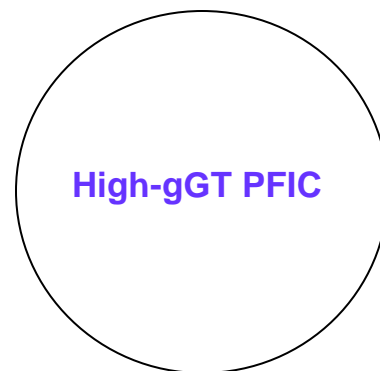
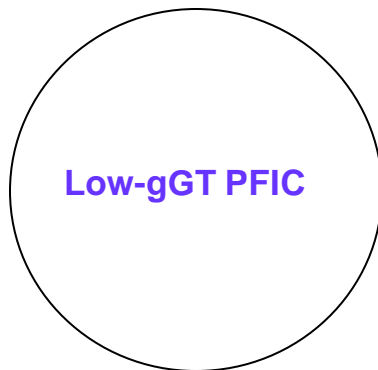
a. Clues to the primary biological problems resulting in disease

One of the great things about using genetics to identify causes of hereditary disease is that genetics 'works,' whether or not we already have an accurate understanding of the biological cause of a disease; therefore, genetic studies can be particularly valuable in identifying the etiology of disorders that have been difficult to figure out using other approaches, and in which the cause of the disease might be a surprise to us, given our incomplete understanding of the biology of cholestasis. While identification of the genetic etiology of a disease provides us with important new information about the primary cause of a disease, much subsequent work is usually needed to translate that new information into improved ability to predict the course of disease, and identify the best treatments for patients.

b. Distinguishing subtypes of disease

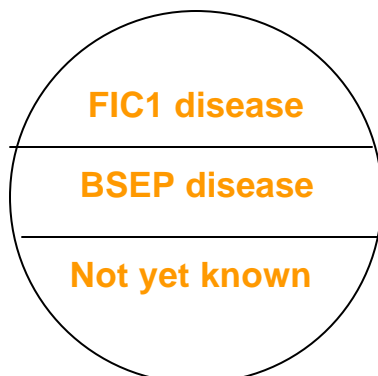
Another benefit of such genetic studies is that they help us to distinguish different forms, or subtypes, of a disease from each other. This idea is illustrated in the figure. The top picture shows the situation before genetic studies of PFIC were begun- only 2 basic types of PFIC could be defined. In the bottom picture, the current situation is illustrated- although there is still more to be learned, we can now begin to divide the 2 general types of PFIC into subtypes of disease, based on genetic etiology. (We don't yet know the precise proportion of PFIC patients with each form of disease; this figure is meant to illustrate a general concept, but is not to scale.)

Before Genetics



Current Knowledge

Low-gGT PFIC



High-gGT PFIC



BSEP versus FIC1 disease

You may wonder why it is helpful to distinguish subtypes of PFIC. I will try to show why such information is useful using the example of BSEP disease versus FIC1 disease. Mutations in both BSEP and FIC1 can result in low-gGT PFIC, as noted above. BSEP (the bile salt export protein) is expressed only in the liver, and is involved in transport of bile acids out of the liver. The identification of mutations in BSEP in some patients with PFIC made sense, given our understanding of the biology of cholestasis; it was logical that defects in transport of bile acids out of the liver could cause cholestasis. Given that the functional defect in BSEP disease is limited to the liver, one might expect that the symptoms and features of BSEP disease stem ultimately from problems in the liver, and should be very treatable by, for example, liver transplantation.

In contrast, while FIC1 is expressed in the liver, it is also expressed in many other places in the body, including, for example, the intestine and pancreas. The exact role FIC1 plays is still under study, although it appears most likely to be involved in transferring certain types of lipid (fat) from one side of cellular membranes to the other; progress is being made in understanding how such a defect might result in cholestasis. It was certainly initially a surprise that loss of function of a widely expressed protein that did not appear to be a bile acid transporter could be responsible for a form of PFIC. The evidence arguing that FIC1 is not a bile acid transporter also raises the possibility that some FIC1 patients, at least early in their course of disease, may retain more ability to export bile acids from their livers than do patients with severe BSEP disease. Depending on how important the presence of FIC1 is in the different parts of the body where it is expressed, we might expect that at least some patients with FIC1 disease would have primary problems with other organs, in addition to problems stemming directly from their liver disease. Rather than being a single-organ disease, FIC1 disease may better fit into the category of 'syndromes,' in which multiple organ systems are directly impacted by the loss function of a protein. Treatments for patients with FIC1 disease might have different outcomes than do those same treatments used in patients with BSEP disease.

In fact, some small studies in the scientific literature appear consistent with the general idea that BSEP disease is a liver-specific disease, while patients with FIC1 disease can sometimes have problems with other organ systems that are not secondary to their liver problems. For example, while liver transplantation cures the original liver disease in both BSEP and FIC1 patients, other problems may continue or develop in FIC1 patients; for example, post-transplant diarrhea appears to be more of a problem in FIC1, than in BSEP, patients. FIC1 may well play an important role in normal intestinal function.

A study we are currently completing

We are currently completing a large study of PFIC due to FIC1 and BSEP mutation. The unique features of our study of PFIC are the relatively large number of patients (145) clinically diagnosed with PFIC; and the verified genetic diagnosis of either FIC1 disease (61 patients) or BSEP disease (84 patients). Most of these patients come from the U.S., Europe, and the Middle East. In addition to performing genetic studies of these patients, we have collected clinical, biochemical, and treatment-outcome data. We are currently analyzing these data to identify commonalities and differences between BSEP and FIC1 disease. Through studying such a large group of patients, we should be able to discern general patterns of disease that aren't clear from observing single patients or small sets of patients, due to the variation between individual patients.

We hope that the results of this study will help improve diagnosis of subtypes of PFIC, enable better prediction of what families can expect their children with PFIC to experience, and improve the ability to identify those patients most likely to benefit from particular treatments. As this is a retrospective, exploratory study, including patients from many different places, with correspondingly different healthcare systems, many of the results will be preliminary, and require testing in additional studies; we hope that results of this current study will, for example, prove useful in planning details of the PFIC studies to be carried out by the Cholestatic Liver Disease Consortium (<http://rarediseasesnetwork.epi.usf.edu/clc/index.htm>).

A final note:

I should explain that when I say 'we' are doing this study, I mean a large group of researchers involved in assembly and analysis of the data, including our team here in San Francisco, research teams in London, the U.K. (that group includes Richard Thompson and Alex Knisely), and Warsaw, Poland (including Joanna Pawlowska and Irena Jankowska), as well as other physician-researchers in the U.S. and elsewhere. Of course, we are also very appreciative of all of the people who chose to contribute to the study - both families affected by PFIC who agreed to participate in the study, and their physicians and other medical personnel who took time from their very busy days to assemble the data from their participating patients and provide it to us. Without the help of so many people, such a study would be impossible.

