Alexion Drug Offers Hope for Rare, Deadly Disorder
March 7, 2012
By Bill Berkrot

An experimental therapy for a rare, often fatal genetic disorder appears to offer hope for infants and very young children with the condition, according to data from a small clinical trial reported in the New England Journal of Medicine on Wednesday.

The enzyme-replacement drug, asfotase alfa, acquired by Alexion Pharmaceuticals Inc with its $610 million purchase of Canada-based Enobia Pharma, could become the first approved treatment for the metabolic disease hypophosphatasia, or HPP.

The condition is a genetic enzyme deficiency that causes bone softening and muscle weakness and can lead to severe lung problems and damage to other vital organs. It affects about 1 in 100,000 newborns worldwide, according to the National Institutes of Health. About half of infants with a severe form of the disease do not survive beyond one year.

In the study of 11 babies and toddlers under three with life-threatening HPP, treatment with asfotase alfa resulted in "striking" improvements in skeletal problems and dramatic improvements in lung function and mobility, researchers reported.

"I'm thrilled to see babies who were really doomed responding to the treatment," Dr Michael Whyte, the study's lead investigator, said in a telephone interview.

"The therapy is proving not only life-saving but also health-restoring," added Whyte, of Shriners Hospitals for Children in St. Louis, who has been working on this ultra-rare disease for more than 30 years.

Videos accompanying the online version of the study in the New England Journal of Medicine show dramatic motor skill improvements of two of the trial subjects. In one, a three-year-old who was unable to stand prior to therapy is shown climbing the steps of a small plastic slide after 24 weeks of treatment.

Respiratory function improved in all patients, researchers said. Ten of the 11 needed breathing support before treatment. After 48 weeks of treatment, only three of the nine children who remained on therapy needed help breathing.

Breathing problems arise as the shape of the chest becomes deformed due to soft bones in the thorax, which compromises lung function, Whyte explained.

'SHE CAN STAND ON HER OWN'

Evie Jayne Elsaesser of Omaha, Nebraska, who got into the trial at just two and a half months old, has been on the therapy for more than two years.
Doctors had been so sure she would survive no more than a few hours that her parents planned a funeral prior to her birth. Even after Evie proved sturdier than expected, her doctor told her parents she would likely survive only five or six months.

"We've had two and a half years that we didn't think we would have," Evie's mother, Lindsey Elsaesser, told Reuters.

"She can stand on her own now. She can walk around furniture when she holds on," said Elsaesser, adding that Evie rarely needs oxygen to assist her breathing anymore.

HPP is caused by a genetic deficiency of an enzyme known as tissue non-specific alkaline phosphatase (TNSALP), which causes life-long abnormalities in metabolism of calcium and phosphate.

All subjects in the mid-stage study had HPP symptoms before they were six months old, including failure to thrive, fractures, substantial motor delay or regression, and kidney problems.

One patient was pulled from the study after the initial drug dosing, and another child died from sepsis after 7.5 months of therapy, according to the study.

The sepsis was thought to be unrelated to the treatment, Whyte said, adding that the child had shown pronounced bone improvement. "He was certainly going in the right direction."

The other nine children remain on the therapy, developed by Enobia, in an extension study.

Skeletal healing was "striking" at week 24 in all but one of the patients, researchers said, noting that the one exception was a child who had virtually no bone in a scan taken prior to the study. Improvement is still being observed in the patients receiving continued therapy, researchers added.

The drug is initially administered with a single intravenous infusion. That is followed by shots given three times per week, with dosages that can be increased if children show signs of worsening symptoms, such as failure to thrive, deteriorating lung function, or lack of evidence that bones are improving on bone scans.

The most common side effect associated with the treatment was a rash at the injection site. There were three cases of serious side effects possibly connected with the treatment -- one case each of respiratory distress, hearing loss and craniosynsotosis, in which a baby's skull bones fuse prematurely.

Alexion has said it hopes to apply for U.S. approval for the treatment in 2014. The company is also studying the drug to treat HPP in older children and adults.

"We're just so thankful that people put the time and effort into researching something that's so rare," Elsaesser said.
Experimental Drug Offers Hope for Rare Bone Disease: Study
Replaces Missing Enzyme in Babies with Severe Hypophosphatasia
March 7, 2012
By Serena Gordon, HealthDay Reporter

WEDNESDAY, March 7 (HealthDay News) -- A new therapy may be the first to offer hope for children born with a rare disease that affects bone development, sometimes so severely that babies die because they're missing a rib cage to protect their lungs.

The inherited disorder is called hypophosphatasia, and the new medication is asfotase alfa. It works by replacing an enzyme that's missing in those with hypophosphatasia. Enzymes are substances responsible for speeding up certain chemical reactions. In hypophosphatasia, the missing enzyme is necessary for proper bone growth and normal metabolism.

A small study of babies and children younger than 3 who had debilitating or life-threatening hypophosphatasia found that treatment with asfotase alfa strengthened bones and improved lung function. After 48 weeks of treatment, many could start bearing weight on their legs and some infants were even taking their first steps.

"We saw striking improvements in these patients with severe hypophosphatasia who received the enzyme replacement," said the study's lead author, Dr. Michael Whyte, medical-scientific director of the Center for Metabolic Bone Disease and Molecular Research at Shriners Hospitals for Children in St. Louis. Whyte is also a professor at Washington University School of Medicine in St. Louis, which conducted the study jointly with Shriners and other institutions.

Results of the research are published in the March 8 issue of the New England Journal of Medicine.

Severe hypophosphatasia affects about 1 in 100,000 babies born in the United States, according to the National Library of Medicine. It's estimated that more people may have the disease, but in far milder forms. The severity of the disease can range from life-threatening to simply causing dental problems in adults, according to background information in the article.

The enzyme in hypophosphatasia that isn't available in sufficient quantity is called alkaline phosphatase. It's responsible for the mineralization of bones and teeth. Mineralization is the process that causes minerals like calcium and phosphorus to be deposited in developing bones and teeth, according to the National Library of Medicine. Without enough alkaline phosphatase, several other substances can build up and cause damage.

There are no approved medical treatments for hypophosphatasia, according to the study.

The current study involved 11 children. All were given an initial intravenous infusion of asfotase alfa, followed by shots of the medication three times a week.

Parents of one baby removed their child from the trial during the initial intravenous treatment. A second baby died from an unrelated infection after more than seven months of treatment.

The remaining nine children have received at least 18 months of treatment with asfotase alfa.
X-rays taken at the start of the study and at weeks 24 and 48 showed significant improvement in bone formation after treatment. In addition, the babies showed improvement in lung function, physical skills, and in the development of intelligence, according to the study.

The treatment was "very well tolerated," Whyte said. And, he added, there was no evidence that the children were developing resistance to the drug.

Treatment with asfotase alfa needs to be ongoing, and it's not yet clear if there are long-term side effects. Whyte and his colleagues are continuing to study the patients enrolled in this trial. He said that he believes children born with the severe or life-threatening form of the disease should be given this medication, even though it's still considered experimental. The reason, he said, is the severe form of this disease is "invariably lethal, usually soon after birth."

Dr. Spyros Mezitis, an endocrinologist at Lenox Hill Hospital in New York City, said the research is promising and groundbreaking. "They're correcting an inborn error of metabolism and mimicking what the body does," he said. "It would be like making someone with type 1 diabetes start making insulin on their own, rather than just replacing it from the outside. I think this will serve as a model for other types of diseases."

But, he added, the current patients will need to be closely monitored as they grow, and that there is a need for further studies.

The study was funded by Shriners Hospitals and Enobia Pharma, which was acquired last month by Alexion Pharmaceuticals. Whyte was a consultant for Enobia Pharma, according to a Washington University news release.
Kids with Rare, Deadly Bone Disorder Gain Hope from New Therapy
March 7, 2012
By Rachael Rettner

When Lindsey Elsaesser was 20 weeks pregnant, an ultrasound revealed her unborn baby girl had extremely fragile bones. Doctors suspected the child had a bone disorder, and would not live long after birth.

"They thought she would die from respiratory failure because her bones were so weak," Elsaesser said. When Elsaesser's daughter, Evie, was born in September 2009, doctors were cautiously optimistic about her condition. While Evie's bones were transparent in X-rays, they sufficiently supported her lungs.

But two weeks later, Evie began to have seizures, and a genetic test revealed she had hypophosphatasia, a rare metabolic condition that prevents minerals such as calcium and phosphorus from being properly deposited in bones.

For babies like Evie, with severe forms of the disease, the condition is life-threatening, and half die before the age of one. In every case known at the time Evie was born, infants with hypophosphatasia and seizures had died within 18 months, Elsaesser said.

There is no approved medical treatment for hypophosphatasia, but, thanks to a new experimental therapy, the outlook may change.

When she was 2 months old, Evie was given a drug called asfotase alfa, an engineered protein designed to take the place of an enzyme that does not work properly in hypophosphatasia patients. Evie is now 2 years old, and she can stand and walk with a walker. Last May, she was able to go off respiratory support, which she had been using for 17 months, said Elsaesser, who is now 28 and lives in Omaha, Neb.

"Without the treatment, her bones would have kept deteriorating" until she could no longer breathe, Elsaesser said.

New drug
Evie was part of a clinical trial of asfotase alfa, the results of which will be published tomorrow (March 8) in the New England Journal of Medicine.

In the study, which included 11 infants and children with severe hypophosphatasia, the drug healed bones, reduced deformities of the skeleton and improved children's strength and breathing abilities. One 3-year-old who was unable to stand before treatment climbed up a ladder with assistance after two
months of therapy. And a baby who required respiratory support when she was born was off support when she was 2, and able to walk and run at 3.

"This therapy proved to be life-saving in these infants, and in many instances, health restoring," said study researcher Dr. Michael Whyte, medical-scientific director of the Center for Metabolic Bone Disease and Molecular Research at Shriners Hospitals for Children in St. Louis.

Previous attempts to treat patients by transfusing the needed enzyme into their blood proved unsuccessful. With this new therapy, the researchers engineered the protein so that it makes its way to the bones "where it really needs to be," Whyte said.

After two months of treatment, 90 percent of patients showed changes in their X-rays that were significant enough to consider them responsive to the drug. One patient, who had no bones visible in X-rays at the beginning of the study, did not initially respond to the drug, but was able to move all limbs after seven weeks of treatment. Nine of the patients are still receiving the therapy.

One patient died during the study, but this was determined not to be related to the treatment.

The most common side effect of treatment was a reaction at the injection site. Other side effects observed in patients in the study, such as infections and respiratory problems, are consistent with symptoms of this condition, the researchers said.

**Promising treatment**

"It's extremely promising," Dr. David Rimoin, a medical geneticist at Cedars-Sinai Medical Center in Los Angeles, said of the treatment. "It seems to, without any question, work in these patients," Rimoin said.

Future work will be needed to see if the drug can completely reverse the condition if started as soon as it is diagnosed, said Rimoin, who with his colleagues is collecting information on hypophosphatasia patients to better understand the natural course of the disease. This will help researchers know how effective therapies are when they are used, Rimoin said.

Today, Evie is doing great, and is enrolled in music classes, Elsaesser said. She has had several surgeries on her feet and head, but unless you look closely, "you really can't even tell that she's sick," Elsaesser said.

Elsaesser plans to continue Evie on the therapy. "It's made a world of difference for her," Elsaesser said. Eventually, Elsaesser hopes the therapy will replace Evie's need for seizure medications.

The new study was funded in part by Enobia Pharma, a company that manufactured asfotase alfa. Last month, the company was acquired by Alexion, which is the current drug developer.

Whyte and colleagues are currently testing the treatment on adults and children with less severe forms of hypophosphatasia.
Rare Disease Day: 30 Million Americans Affected
Feb. 29, 2012
By Lisa Collier Cool

Today, on the rarest of days, millions around the world are observing Rare Disease Day. Collectively, 30 million Americans—nearly one in 10—are affected. Of the 7,000 rare diseases identified so far, many of which are progressive, disabling, or even life-threatening, only about 200 have approved therapies. Most aren’t even being studied by researchers.

More than half of the patients battling chronic rare diseases are kids. Here are the stories of two of these children and the challenges they’ve faced.

Bridget Gum: Hoping for a Cure

When Bridget was a baby, a rare neurological disease attacked her spinal cord. “She was totally limp, like a rag doll, and I knew it was really bad,” says her mom, Mary Anne Egan, of Ringoes, New Jersey. “In the ER, the doctors couldn’t tell us anything.” Initially, Bridget was misdiagnosed, as often occurs with rare diseases.

Ultimately, tests showed that she had transverse myelitis, inflammation across the spinal cord, marked by sudden muscle weakness that may progress to paralysis. It strikes about 1,400 Americans a year, either as a complication of viral illness or for unknown reasons, as was the case for Bridget.

A Revolving Door of Medical Crises

In some cases, patients recover, but Bridget was left a quadriplegic. Twice, the disorder has caused her to stop breathing, and she had to be put on a respirator. “The first two years, she had one setback after another and was in the hospital ICU so often, it was like a revolving door,” says her dad, Michael.

Now nine years old, and exceptionally intelligent, she has never taken a single step. Thanks to intensive physical therapy, she’s able to participate in a community swimming team, attend mainstream classes at school (in a wheelchair), and can perform many activities of daily life, using adaptive equipment.

And as she continues to make gains, she has an upbeat outlook. “I feel lucky,” she says, after meeting other kids with more severe disabilities. “A lot of people who have had something bad happen think life can never get fixed, but I’m hoping that the day will come when I get up and walk.” She pauses for a moment, then adds, “Never stop believing.”

Nathan Biermann: Helped by a Medical Breakthrough

Nathan Biermann was 11 months old when he was rushed to the ER, listless and suffering from a raging fever. After a battery of painful tests, specialists diagnosed atypical hemolytic-uremic syndrome (aHUS), a disease that causes blood clots to form in vessels supplying the kidneys.

So rare that it only occurs in one in 500,000 Americans, this clotting disorder can trigger recurrent attacks of kidney damage and anemia. “Specialists told us that Nathan could go into kidney failure and need dialysis,” says his mom, Cheryl Biermann. “I was so frightened and overwhelmed.”
Any Mistake Could Be Catastrophic

During the second year of his life, Nathan spent 180 days in the hospital. The only treatment available was transfusions of fresh frozen plasma. “Each time, his kidney function would drop to 10 percent, then he’d recover,” says his dad, Bill. “When he was home, we felt like we were flying a helicopter without training—and any mistake could be catastrophic.”

By the time Nathan was eight, he was on dialysis. “Along the way, there were four life-threatening situations. At one point, he coded at 2 a.m. in the hospital and was put on a ventilator.” Cheryl quit her job to care for Nathan and home school him between attacks that left him increasingly weak and debilitated. About half of people with this disorder develop end-stage renal disease.

A Life-Saving Solution

Nathan desperately needed a new kidney, but he didn’t qualify for a transplant because his clotting disorder would attack and destroy a new kidney. But last year, his doctors told the family about a new treatment for aHUS: a now FDA-approved drug called Soliris. Given by IV, it helps prevent the breakdown of red blood cells and inhibits blood clotting. However, it’s not a cure and can have serious side effects, with some patients developing life-threatening or fatal meningitis infections.

Nathan’s treatment, however, was so successful that that two weeks later, he underwent a kidney transplant, using a kidney donated by his mom. After the surgery, says Cheryl, “I asked, ‘How do you like my gift?’” He said, ‘I guess I don’t need any Christmas presents.’” The Biermanns have started a foundation to offer support and information for families whose kids have aHUS.

Rare Disease Resources

To learn more, visit the websites of National Organization for Rare Disorders (NORD), the R.A.R.E. Project, and the National Institutes of Health Office of Rare Diseases Research.

I dedicate this post to the memory of my childhood friend Lance Rosenblatt, who was born on the rarest day of the year, February 29, and died in 2009 after developing a rare autoimmune disease, scleroderma. Today, he is remembered by friends and family around the world, with the hope that his birthday—and Rare Disease Day—will help raise awareness of the tragic toll these conditions can take and the dire need for better treatments.
By now, many are familiar with rising star Jake Ellenberger who's on a fast track to the top of the UFC's welterweight division.

But if you're not familiar with his fraternal twin brother Joe, you will be.

Joe, the oldest twin by exactly one minute, will be squaring off on Friday, March 2nd at Titan Fighting 21 when he meets Jesse Zeugin in a lightweight showdown.

However, just a little over two years ago, Ellenberger was told that he may never fight again.

In a recent interview, Ellenberger told Bleacher Report of his rare blood disease that almost prevented him from having any physical activity for the rest of his life.

"In October of 2009 I was diagnosed with what's called paroxysmal nocturnal hemoglobinuria (PNH). I actually grew up never even knowing I had the disease. You know, I wrestled all the way through college and then began my MMA career," said Ellenberger. "I felt good and everything was going my way."

"When I got diagnosed with the blood disease the first thing they told me was the way people usually died which was from a blood clot in the brain, lungs or heart. So, that was a big worry for me," stated Ellenberger. "They put me on blood thinners right away and that prevented me from participating in anything physical."

"That was an extremely hard thing to hear. My doctors told me they didn't know if I'd ever be able to participate in contact sports for the rest of my life. I wasn't built for a desk job. I was engineered to do what I'm doing now," said Ellenberger. "That was a tough thing for Jake and I to handle."

Despite the small percentage of overcoming the odds, Ellenberger was determined to continue his career.

And, while his disease may never leave, Ellenberger continues to battle and doesn't miss out on an opportunity to be thankful for everything he's been given in his life.

"I still have it but I'm doing a lot better. I'm on medication right now that protects my blood cells from dying. I still have a low red and white count compared to the average person," shared Ellenberger. "But, it's not so low to where I can't fight but it's definitely lower than the majority."

"It may put me at a slight disadvantage but I believe I make up that disadvantage through hard work," said Ellenberger.
Ellenberger continues to defy all odds and will look to bounce back from the first loss of his mixed martial arts career where he fell to Justin Salas in October of 2011.

"It was hard to lose my first fight but I think I was going through much more than that fight and losing. It was the first time I made 155 in two years so my body was much different than what it ever was before," said Ellenberger. "A lot of changes were being made before, during and after my fight in regards to my weight cutting."

"I think I'm a better fighter than he is but he was the better man that night. Justin's now getting the opportunity he deserves to fight in the UFC," stated Ellenberger. "I think I beat him 364 nights of the year but you can't take anything away from him."

Now slated to take on Zeugin in less than a month, Ellenberger is more than ready to get back to action and move closer towards his goal of becoming a world champion.

Ellenberger is more concerned with taking one fight at a time and letting the rest take care of itself.

"I like to think any fight that I sign I have the upper hand heading in. I have an engineered game-plan to win. He wrestled at a good Division II college so I know he's tough and he'll come to fight," said Ellenberger.

"I like to think my hands are a little bit better and faster. I think I can hit a little harder as well," stated Ellenberger. "So, I'll rely on my stand-up rather than my wrestling this time."

When asked if a win over Zeugin would be enough to solidify his reservation to the UFC, Ellenberger calmly stated,

"My goal isn't necessarily to be in the UFC, it's to be a world champ. There's smaller goals along the way that I'd like to accomplish and the UFC is one of them."

"I will be working towards that goal. I can only control the things I can control though. I'm not worried about that right now. The rest will take care of itself like it always does."

But, before Ellenberger can move closer towards arriving to the UFC, his younger twin brother will be squaring off with Diego Sanchez in the main event of the evening at UFC on Fuel TV I on Wednesday, February 15th.

Ellenberger wasn't asked whether or not he thought his brother and best friend would win but he did weigh in on the possibility of Sanchez being knocked out for the first time in his career.

"If Jake doesn't knock him out then rest assured, no one on the planet ever will."

As Ellenberger continues to progress in his career, he lives by one simple motto: "Training for Reigning."

"Mark Munoz is much better at explaining it than me but it's really just letting your training reign throughout entire life. I want it to show in my everyday life and not just in gym," said Ellenberger. "I'm letting it become my lifestyle."

"I want to make my life more efficient. You don't do things that are detrimental to your life or body. Never do anything to harm your existence," stated Ellenberger. "It's keeping your faith in God, lighting a fire in your heart and never giving up."

While Ellenberger has currently accomplished a lot over the course of his career, he realizes none of it would be possible without family.
"My family is really everything to me. My mom, dad and brother Adam have always been there to support me every step of the way. They've been a huge part of my life. My wife Vanessa has been there through thick and thin," shared Ellenberger. "Through the diagnosis and even before that."

"They've been there through it all and I wouldn't be who I am today without them."
ABITA SPRINGS, La. — A Medical breakthrough is making a normal life possible for a Northshore teenager with a rare disease. Seventeen-year-old Christian Billingsley has Atypical Hemolytic-Uremic Syndrome, which is usually referred to as aHUS.

For now, Christian’s young life is dominated by kidney dialysis. An in-home dialysis unit sits permanently in his bedroom. Christian is hooked to the unit six days a week, for three to four hours at a sitting.

"It's painful getting on, and sometimes, because of the way fluid comes off your body I can get cramps while I'm on it," Christian Billingsley said. "That can be painful too."

For a high school sophomore, daily dialysis makes having a normal social life virtually impossible. Often, Christian gets home from school, starts homework, gets on the dialysis machine, and by the time he's finished with dialysis, it's time for bed. As inconvenient as it is, that dialysis machine is literally keeping him alive.

The Family Journey

Christian is now the oldest of Gene and Aida Billingsley's three children, but before 14-year-old Gabrielle and 8-year-old Brandon were born, Christian was already suffering effects from his disease.

The family journey began when little Christian was only three months old, with a huge bout of projectile vomiting. "And he broke out in little bruises all over his body called petechiae," Gene Billingsley said, "it literally looks like a rash over the whole body."

By the next day, the Billingsleys had a diagnosis, and their fight against aHUS had begun. The disease causes clotting problems and often attacks the kidneys. And the Billingsleys quickly learned of the recurring nature of aHUS.

“We’d be in the hospital two weeks, we’d come out, we’d be home a week,” Gene Billingsley said. “It’d come back.”

Eight months after the initial diagnosis, Christian’s kidneys went into failure, and he was put on dialysis for the first time.

When Christian was two, Gene Billingsley donated one of his kidneys to his son, with the hope that the new kidney would cure Christian's problems. Gene Billingsley said, they also had realistic expectations,
and knew that even if the kidney didn't help in the long term, it would benefit Christian's development short term. And it did, Gene and Aida said. Their goal with their young son was simple: keep him alive and do anything they can to keep him as healthy as possible, until medical science caught up with their son’s disease.

The replacement kidney lasted just six months before failing.

"So we were completely out of the option of another transplant," Aida Billingsley said. "He was on dialysis indefinitely."

Christian was surviving, but on a medical rollercoaster.

"We would do ok for a year or so," Aida Billingsley continued, "then we would have some complication, something big happened, and we'd be in the hospital for months at a time."

The lowest point came not long after Katrina, in late 2005, when Christian was near death in a Memphis hospital.

"He was massively infected," Gene Billingsley said. "All his organs were shutting down."

"The sicker he got, the less he wanted to fight. He was very discouraged, I guess," Aida Billingsley recalled. "It just got to the point where he wasn't interested in doing what he needed to do."

Christian survived that near death episode, and it wasn't the only one. "Five times where the doctors have said, it's touch and go right now," Gene Billingsley added.

**The Breakthrough**

Then in September 2011, the Billingsleys got the medical breakthrough for which they had been waiting. The FDA approved a drug called Soliris, and medical science had caught up.

"We did it," Gene Billingsley said. "This drug takes away all the issues that come up with HUS." Since getting on the drug, Christian said he feels, "Amazingly different."

He’s healthier now than at any point in his live, and the Billingsleys expect soon, possibly within the next month or two, that Christian will be able to get back on the kidney transplant list.

"It would be a miracle in Christian's life, absolutely," Aida Billingsley said.

The possibility of getting off daily dialysis means Christian can now consider college choices all over the country.

"I can go anywhere," Christian Billingsley said. "It's like the whole country, like I had a couple little dots on it, and now it's all lit up."

For the first time in his life, he said, he feels almost normal. "It's amazing," Christian Billingsley said.

"I never doubted we'd be in this spot," Gene Billingsley said. "I just had it put on my heart, in the first couple months that he's going to be all right."

Six years ago in Memphis, it didn't look like it, but now, it does.
Toddler with Rare Disease Benefits from New Drug
KREM-TV, Channel 2
Spokane, Wash.
Jan. 27, 2012
By Kylee Cruz

SPOKANE, Wash. -- Less than a year ago, an infant from Ephrata, Wa., was fighting for his life, but thanks to a new drug, Isaiah Brewer is doing much better.

Last January, 9-month-old Isaiah Brewer started to get extremely sick. His parents said he was very pale and had blood in his urine.

"He really lost all his energy," said Isaiah's father, Riley Brewer "Basically, it just wasn't him."

Isaiah's parents, Riley and Heather Brewer, rushed him to the ER in Moses Lake.

"All of his blood levels were low, red blood cells, white blood cells, so immediately they started to give him the transfusion," Riley said.

He was flown to Sacred Heart, where doctors diagnosed him with aHUS, a disease that damages the vital organs and is most common in kids. If found during a child's first year of life, it can be fatal.

"It was pretty frightening. The diagnosis came just in time, because the disease came on incredibly strong. He was sick and he was getting sicker so fast and we were shocked," Riley said.

Isaiah's kidneys started to fail and he was soon put on dialysis. He was sedated and had tubes in his mouth and nose and IVs in his arms.

"It was tough, it was really tough," said Heather.

His parents had to make a big choice, though. At the time, Sacred Heart was one of only five hospitals in the country that had just started a clinical trial for treatment of aHUS. The FDA hadn't even approved the treatment drug, Soliris.

But the Brewers didn't want to see Isaiah suffer any more, so they approved the new treatment. "For me it wasn't a hesitation at all," Heather said.

Isaiah started the treatment immediately and was the youngest person to ever use the drug.

"He started to recover quickly and it was a miracle drug and it changed overnight," Riley said. "When I was holding him and I started singing, he reached up and started playing with my face and he started laughing at me, and at that moment, we knew things were getting better."
Isaiah was at the hospital for five weeks but with each dose of Soliris, he got better.

"That medication was at the right place at the right time, really," Heather said.

More than six months later, the FDA approved the drug. Now a year later, Isaiah still comes twice a month to get treatment, but the drug has helped him.

Isaiah acts just like any other little boy. He loves cars and trains and playing with all sorts of toys. "It was like he had a second chance at life," said Riley.

"We have a miracle and I am just really thankful for that," said Heather.

At this point, there's no cure for aHUS, but Isaiah has the treatment and the love and support of his family, which can be the best medicine of all.

"If the worst thing we have to do is have him take medicine for the rest of his life, then I can live with that," said Heather.
A man who lost seven members of his family to a rare genetic kidney disease - which he also suffers from - has welcomed a new wonder drug which will treat the condition.

Shaun McCowie is living with aHUS, a condition which causes small blood vessels to be blocked by clots, ultimately leading to kidney failure. The 49-year-old’s dad Terence died of the condition at 55 and so did his siblings Daniel, five, John, one hour, Theresa, three-months and Jennifer, 19.

His nephew Mark, 22, and uncle Larry, 56, also succumbed to the disease. Mr McCowie, a bereavement councillor from Newcastle, has spent much of his life on dialysis.

But he is delighted by the development of new drug eculizumab, which has been discovered to treat the condition.

Clinical trials helped identify the drug which dramatically improves the care of patients with aHUS or Atypical Haemolytic Uraemic Syndrome.

Almost half of all patients with it die, require dialysis or have permanent kidney damage within the first few years of diagnosis.

It is estimated that only 139 patients in England have the condition. But the genetic defect can devastate families as it is passed on from one generation to another.

Results from clinical trials carried out by Newcastle University and Newcastle Upon Tyne Hospitals NHS Foundation Trust have shown eculizumab is the best first-line treatment for the disease. It prevents kidney damage by blocking an immune protein called ‘complement’.

Mr McCowie said: ‘The impact the disease has had on my family has been huge.

‘We are now in a completely new era of research and this has brought to the patient a drug that could completely change the way patients with the illness are treated.

‘I am the only surviving family member of those who were diagnosed with the illness and I want to thank everyone involved in the research for what they have done.’

Eculizumab has been licensed for use in aHUS cases in the UK, but at a cost of approximately £250,000 per patient per year, it is not currently funded by the NHS.

Experts in the North East have therefore insisted that there are ‘inevitable postcode inequalities’ for people being treated.

They are campaigning for a national specialised service for diagnosis and treatment to be established in the Newcastle Upon Tyne Hospitals NHS Foundation Trust.
The group is being led by Tim Goodship, professor of renal medicine at The Institute of Human Genetics, Newcastle.

He is internationally respected in the field of aHUS and was the first to identify the abnormality in complement that is thought to cause the disease.

Prof Goodship said: 'The use of eculizumab is an exciting development in the treatment of aHUS and its use significantly improves the outlook for patients.

'The majority of people who are diagnosed with the disease end up on dialysis within the first one or two years, and the prospect of transplantation is not good as the risks are too great.

'Until recently the outlook for patients was poor. However, this has changed dramatically in the last two years because of the drug eculizumab.

'The drug is so effective that it is like giving penicillin to a patient with pneumonia - the improvement in the condition is very dramatic'

An application has been submitted to the Advisory Group for National Specialised Services to make eculizumab available to all clinically appropriate patients in England.

In the short-term, treatment with eculizumab within the context of the national specialist service would enable successful kidney transplants in patients who are already on dialysis.

In the past kidney transplants for patients with aHUS have been a waste of resources as there is a 50 to 80 per cent rate of organ rejection due to recurrent disease. The proposed service and treatment with eculizumab will ensure that this does not happen in the future.

In the longer-term, the aim of the new service and treatment is to prevent the development of end-stage renal failure needing long-term dialysis in patients presenting with aHUS for the first time.

Professor Goodship added: 'It is a very encouraging time for people with aHUS. 'Twenty years ago we did not know what caused the disease. 'However, through research we have been able to identify what causes the illness and establish an effective drug treatment.'

Mr. McCowie's son Daniel does not have the condition. His surviving siblings Walter, Patrick and Julie do not have the disease either.
Alexion Pharmaceuticals ended 2011 by announcing a deal to buy Enobia Pharma, and its hypophosphatasia drug, for up to $1.08 billion.

Alexion is offering $610 million in cash upon completion of the transaction and up to $470 million more upon achievement of various regulatory and sales milestones. The key attraction of Enobia, a private company based in Montreal, Canada and Cambridge, Massachusetts is ENB-0040 (asfotase alfa), which is in Phase II for hypophosphatasia, “an ultra-rare, life-threatening, genetic metabolic disease for which there are no approved treatment options”.

HPP is characterized by defective bone mineralisation and impaired phosphate and calcium regulation leading to progressive damage in multiple vital organs. This includes destruction and deformity of bones, profound muscle weakness, seizures, impaired renal function and respiratory failure. About 50% of infants with the disease do not survive past one year of age.

Alexion chief executive Leonard Bell said that asfotase alfa, which has orphan drug designation in the USA and Europe, has shown “very compelling Phase II clinical data in infants and juveniles with hypophosphatasia”. He added that the acquisition of Enobia “is very well aligned with Alexion’s objective to develop and deliver life-transforming therapies for patients suffering with ultra-rare, severe and life-threatening disorders”.

Alexion, which markets the blood disorder drug Soliris (eculizumab) for the treatment of atypical haemolytic uremic syndrome and paroxysmal nocturnal haemoglobinuria, intents to finance the acquisition through cash on hand and $300 million of committed bank debt.
Alexion Pumps Up its Rare Disease Portfolio with Enobia Acquisition
Dec. 29, 2011
By Lisa LaMotta

Alexion Pharmaceuticals Inc. announced on Dec. 28 that it has agreed to pay up to $1.08 billion for privately held Enobia Pharma Inc. in a transaction that includes both upfront and milestone payments. The acquisition will broaden Alexion's presence in the ultra-rare disease treatment space; an area in which it already has acquired considerable expertise.

Under the terms of the agreement, Alexion will pay $610 million upfront in the all-cash transaction, as well as another $470 million to Enobia shareholders should the company's lead compound, asfotase alpha, achieve certain undisclosed regulatory and sales milestones. The acquisition is expected to close in the first quarter of 2012 and will be financed through Alexion's cash on hand, as well as $300 million in debt.

In exchange for the cash payments, Alexion will receive the worldwide development and commercialization rights to Enobia's asfotase alpha, a mid-stage compound meant to treat an ultra-rare genetic disorder called hypophosphatasia (HPP). Enobia has identified about 2,600 patients worldwide and analysts estimate peak sales of about $500 million. Alexion has said that it expects to enter the market in the second half of 2014; first in a pediatric indication and then in adults. The time between now and then will be spent scaling up the manufacturing process.

"Our expanded development team will then be able to accelerate our ongoing programs with soliris (eculizumab) and other innovative compounds while also expediting the development of asfotase alfa for patients suffering with HPP," said Alexion CEO Leonard Bell on an investor call.

The disorder usually develops at birth and leads to mortality in 50% of infants; in those who do survive, children and adults live with severe muscle weakness, bone pain, fractures, renal and respiratory problems. HPP is caused by a genetic defect that leads patients to have a deficiency in an enzyme known as tissue non-specific alkaline phosphatase. The enzyme deficiency leads to problems with phosphate and calcium mineral metabolism. Asfotase alpha, which could be the first treatment for the disorder, works by normalizing the metabolic process, thus preventing or reversing the complications of the disease.

Asfotase alpha has completed an open-label Phase I study in adult HPP patients, a Phase I/II study in severely affected infants with HPP, as well as a six-month Phase II study in juvenile patients with HPP. It has shown benign safety affects so far and promising efficacy results. Phase II studies have only been conducted in a small number of patients, approximately 24 patients. The compound is expected to advance into a Phase III study in adults.

"Asfotase alfa is on track to be the first and only therapy to specifically address the underlying pathology of HPP through a targeted enzyme replacement therapy and therefore could dramatically alter the course for patients with this disease," said Stephen Squinto, Alexion's co-founder and head of R&D, during a Dec. 29 conference call.

Enobia previously earned about $173 million in cash through venture fundraising and a private placement.
Developing Treatments For Rare Diseases

Enobia is Alexion's third acquisition in 2011; it also bought Taligen Therapeutics Inc. and Orphatec Pharmaceuticals GMBH.

Under the deal announced Jan. 31 with privately held Taligen, Alexion gained a portfolio of preclinical product candidates, including lead candidate TT-30, a recombinant fusion protein to replace defective complement factor H, which has potential as a treatment for age-related macular degeneration as well as in several smaller orphan diseases. Alexion paid $111 million upfront and agreed to pay further milestones as the programs progressed.

On Feb. 10, it announced it would add the assets of German company Orphatec. Alexion paid just $3 million upfront for the German company's assets, which include patents surrounding a treatment for molybdenum cofactor deficiency (MoCD) type A, an ultra-rare disorder affecting infants for which there is no approved treatment.

"The [Enobia] acquisition makes strategic sense given asfotase alpha fits into Alexion's sweet spot in rare disease and is leveraged by the business model in addition to introducing a new late-stage asset," said Collins Stewart analyst Salveen Richter.

All three acquisitions added to Alexion's portfolio of ultra-rare disease drugs, including its only currently marketed product Soliris for treatment of paroxysmal nocturnal hemoglobinuria (PNH) and, more recently, for atypical hemolytic uremic syndrome (aHUS). The drug is one of the highest priced on the market with a price tag of $400,000 annually. First sold in the U.S. and Europe in 2007 for PNH, Soliris has received regulatory approval in Australia in 2009 and Japan during the third quarter of 2010. In addition, the company aims to add Turkey, Brazil and Russia by the end of 2012. Soliris received approval in the U.S. and Europe for aHUS in September 2011.

Moreover, Alexion is pursuing additional hematological and neurological indications for the drug, a monoclonal antibody that binds to a protein critical to the complement system's destruction of cells, a process that is part of the body's innate immune system. Soliris is the first approved complement inhibitor on the market.
Joyce Wins Fight for Medication
Dec. 12, 2011
By Linzi Watson

A Gourock pensioner has won her fight for a drug to treat a life-threatening blood condition – but only after falling seriously ill.

Joyce Juszczak, 65, who suffers from Paroxysmal Nocturnal Hemoglobinuria (PNH), was turned down for the treatment three times in seven months by bosses at NHS Greater Glasgow and Clyde.

Despite advice from specialists and worsening symptoms, they insisted that Mrs Juszczak was not an ‘exceptional’ case.

But when the pensioner was hospitalised in extreme pain last week and found to have suffered a clot on her kidney, her eligibility for the £250,000-a-year Eculizumab was reassessed.

On Friday, it was finally agreed that she should be given the drug and on Saturday afternoon she started the treatment.

Her daughter Beverley Hardie, from Wemyss Bay, who has been leading the fight for the drug – which is available to other PNH sufferers in Scotland and England – said her mother can now look forward to the future.

She told the Telegraph that yesterday, just 24 hours after the first dose of Eculizumab, there was a visible difference in Joyce whose condition had rapidly deteriorated.

Beverley said: “We can see a change in her, she has colour back in her face and is sitting up in bed chatting.”

“She is also talking about getting back into her bowling in the summer and putting her life back on track”

“But we are upset that she has had to suffer so much and feel she should have been prescribed the drug in May when the first application was made.”

She added: “The last year has been horrendous”

“We don’t yet know how much damage the clot has caused and it could have been much worse if it had gone into another part of her body.”

"We always knew that mum was a ticking time bomb and experts told us that one clot would lead to more.”

"So we are very relieved that she now has the treatment.”

PHN is a rare condition which destroys the red blood cells and can lead to fatal clots and kidney failure.

Painful symptoms include crippling headaches, extreme fatigue and PNH spasms - all of which Joyce endured.
She also underwent 10 blood transfusions in 14 months to cope with a falling blood count and was forced to give up on her active life.

The pensioner, who is supported by her daughters and husband Henry, previously told the Telegraph that she lived in fear of being struck down by a clot.

Unfortunately her fears were realised on Friday last week.

Beverley added: "Mum was doubled over in pain for a couple of days.

"She went to a hospital appointment and was admitted and given an emergency blood transfusion and a CT scan. It was then discovered that she had suffered a clot on her kidney."

Joyce's consultant submitted another application for Eculizumab on Tuesday and this was approved on Friday. The treatment was immediately sent to IRH via courier and started on Saturday.

Joyce will now be given the medication once a week for five weeks and then fortnightly thereafter.

The long battle for the drug was one which she took all the way to the top, after being refused in May and again on appeal, she pleaded her case with health secretary Nicola Sturgeon at the Scottish Parliament in October.

The deputy first minister promised a reassessment of her condition but after looking at her case NHS GGC again declined the prescription.

The family said that they felt the frail pensioner had been given a 'death sentence'.

But Beverley today added: "Now all of the family can look forward to Christmas and the future with more hope.

"Mum and the family would like to thank the consultants and nurses, past and present at IRH for their kindness, care and support."
CHESHIRE — Drug regulators with the European Union have given a boost to Alexion Pharmaceuticals by approving the company’s product Soliris for use in treating a rare genetic disease that over time damages a person’s kidneys and other vital organs.

The Cheshire company announced this week that its drug Soliris can now be used by doctors in European Union countries to treat atypical hemolytic uremic syndrome (aHUS) in children and adults.

The U.S. Food and Drug Administration approved Soliris for use in treatment of aHUS in late September.

“This drug alters the course of aHUS and can make a dramatic difference in patients’ lives,” said Dr. Christophe Legendre, professor of nephrology at University Rene Descartes-Hôpital Necker in Paris.

Nephrology is the branch of internal medicine and pediatrics devoted to the function of the human kidney and diseases that affect it.

Soliris is expected to begin being available to aHUS patients sometime during the first half of next year.

Soliris is the only drug that Alexion has successfully brought to market. It was initially approved in 2007 for use in the treatment of a rare and life-threatening blood disorder called paroxysmal nocturnal hemoglobinuria.

“The EC approval marks another milestone for Soliris and brings life-transforming hope another step closer to families in Europe living with this severe, devastating and life-threatening disease,” said Dr. Leonard Bell, Alexion’s chief executive officer. “We will work diligently with the health care authorities in individual countries to make Soliris available to children and adults with aHUS as quickly as possible.”

Buoyed by the announcement from the European, the price of Alexion’s stock rose by $2.69 over Tuesday’s closing price to end Wednesday’s trading at $68.66. The stock trades on the NASDAQ Stock Market under the ticker symbol ALXN.
Study: New EHEC treatment approach successful

Nov. 14, 2011

The EHEC outbreak earlier this year tested an antibody treatment of critically ill patients, which proved to be effective. The interim results of a clinical study by scientists at the University Hospital Eppendorf (UKE) were presented on Monday in Hamburg.

"The use of the antibody eculizumab has improved quickly and significantly damage to the kidneys, brain and blood of the patient," said Professor Rolf Stahl.

95 percent of the 148 recorded patients in the study were given a complete cure or partial improvement of the clinical picture, the report said. The EHEC patients had the so-called hemolytic-uremic syndrome (HUS) suffered a coma, kidney failure and brain damage can result. "In part, threatened lasting damage," said Professor Christian Gerloff.

First, the physicians had replaced the blood plasma of those affected, but the desired effect did not occur. Subsequently, the patients received the antibody eculizumab - whose effectiveness was unclear at that time. Have in the course of treatment, the condition of seriously ill patients normalized slowly, Gerloff reported.

Almost all patients after eight weeks were only moderately, slightly or not significantly been hampered, in part, even without symptoms. "This is a sensational success." All patients had regained consciousness, did not require dialysis and had no epileptic seizures. The blood picture returned to normal in 93 percent of study participants.

EHEC cases in the future will probably also help the antibody, so Gerloff. However, there have been no studies in the comparison group - that is the weakness, Steel said. Furthermore, it should be approved no drug. Should be available in mid-2012 the final results of the study. It is also important, the condition of patients in one to two years to grasp again and compare the data, the researchers said.
Joe Ellenberger Is Ready for the VFC Title and Whatever Comes Next
Oct. 11, 2011
By Ryan Stoddard

On October 14th, Joe Ellenberger will be stepping into the cage to face off against tough Denver based fighter Justin Salas to see who gets to leave with the VFC lightweight title. With two of the best 155er’s in the country that aren’t signed to a major organization, it may be the last time you see the winner of this fight on a regional promotion. Every fighter’s goal is to make it to the UFC, but Joe would like to put the VFC belt back around his waist before he goes.

By now, Joe Ellenberger’s story is a familiar one. Tearing through fighters in the Midwest, he was the VFC lightweight champion and on the verge of making the move to be a UFC fighter. That’s when he was diagnosed with PNH, a disease which affects the formation of red blood cells, which threatened to end his MMA career and possibly his life.

After taking some time away, Joe returned to MMA and looked better than ever. The time off actually did help Joe. Instead of sitting in a corner feeling sorry for himself, he traveled to some of the best camps in the country training with his younger (by a minute) brother, UFC contender and VFC alum, Jake Ellenberger.

Now the only person standing in his way of the VFC belt and potential UFC contract is Justin Salas. Joe’s familiar with Salas and is looking forward to a hard fight against one of the few opponents whose wrestling ability may be equal to his own.

“I’ve seen him a little bit on the local circuit in Denver. I know he wrestled at Wyoming. He’s a good athlete. He was a Greco guy in high school, I remember hearing his name back then. I know he trains with some pretty good guys. He’s kind of their top little guy out there.”

When two fighters that are both so well rounded and appear to be very evenly matched the path to a victory becomes more difficult to plan. This isn’t a clear cut striker vs. grappler contest. This fight could be decided in a number of ways, and Joe’s very aware of that.

“He’s gonna be a wrestler. I’m sure our game plans are probably fairly similar. Put the other wrestler on their back and land punches. Try and grind him out and see who’s got the better gas tank. Or it could be more of a stand up match with one or two takedowns scored a round. I don’t think he’ll possess anything I haven’t seen yet, but I know he’ll bring the best Justin Salas to date.”

With two so evenly matched fighters the one thing that usually decides the fight is what’s in the gas tank. When asked if he thought Justin training at altitude would give him an advantage in the cardio department, the answer was typical for a fighter who has already shown he can keep the same pace at the end of the third that he does at the start of a fight.

“If it was a marathon, maybe, but it’s a fight.”
When these two fighters step into the cage, there is potentially more than just the VFC lightweight title on the line. After winning the VFC belt, the next step may be a trip to the UFC octagon. It would be understandable if there was some added pressure going into this fight. If it’s there, Joe’s not showing any.

“Everything is taken one step at a time. I think obviously the winner of this fight will be ready for the next step up, because we’re right there on the brink. If it’s a really good fight and not a decisive winner then maybe we’re both ready for the big show.”

Joe Ellenberger had a more difficult path than most to get to this spot, but now he’s back, and the only thing standing in the way of getting his belt back is Justin Salas. This promises to be a scrap that MMA fans will be talking about for a very long time. October 14th may be the last time you get to see Joe fight in a VFC cage and it will be one that fans won’t forget.
Alexion Wins Broader Approval of Drug for Rare Blood Disease
Sept. 23, 2011
By Anna Edney

Alexion Pharmaceuticals Inc. (ALXN) won U.S. regulatory approval today for the first drug to treat children and adults with a rare genetic blood disease that progressively damages vital organs.

The Food and Drug Administration cleared the medicine Soliris, chemically known as eculizumab, for atypical hemolytic uremic syndrome on the condition the company conducts additional clinical trials to confirm the medicine’s benefit, the Cheshire, Connecticut-based company said in a statement. More than half of all patients with the disease die, require dialysis or have kidney damage within a year of diagnosis, Alexion said.

A European Union advisory panel also recommended Soliris to treat the disease in adults and children, the company said today. Alexion raised its revenue forecast to $760 million to $768 million from $745 million to $755 million, according to a filing with the U.S. Securities and Exchange Commission.

“Soliris is the treatment advance that the aHUS community has been seeking for decades,” Bill Biemann, co-founder of the Foundation for Children with Atypical HUS, said in the statement. Alexion rose $2.78, or 4.4 percent, to $66.15 at 4 p.m. New York time in Nasdaq Stock Market trading. The shares have increased 64 percent this year.

Blood Clots
Atypical hemolytic uremic syndrome affects one in 500,000 people per year in the United States, according to the National Institutes of Health. The disease causes blood clots in the small blood vessels throughout the body. It disproportionately affects children, the FDA said in a statement.
Soliris was first approved in 2007 in the U.S. and European Union to treat a rare blood disorder, Alexion said. A European Union decision on the drug in atypical hemolytic uremic syndrome is expected in two months, the company said.

Alexion said it raised its forecast “based on continued strength” of Soliris sales in the U.S., Western Europe and Japan for the already approved disorder, called paroxysmal nocturnal hemoglobinuria, or PNH. Today’s new approval wasn’t a reason for the increased sales estimate, the company said in its filing.
Eculizumab Receives Accelerated Approval for Pediatric, Adult Hemolytic Uremic Syndrome

Sept. 23, 2011

The monoclonal antibody eculizumab has received accelerated approval from the FDA for the treatment of pediatric and adult atypical hemolytic uremic syndrome.

Eculizumab (Soliris, Alexion, Inc.) inhibits the production of the terminal complement components C5a and the membrane attack complex C5b-9 by binding to complement protein C5. Prevention of the formation of C5a and the terminal complement complex inhibits complement-mediated thrombotic microangiopathy in patients with atypical hemolytic uremic syndrome (aHUS), according to an FDA press release.

In March, 2007, eculizumab received approval for the treatment of patients with paroxysmal nocturnal hemoglobinuria.

Accelerated approval is based on data from two prospective, single arm trials enrolling 37 adults and adolescents with aHUS, and one retrospective trial of 19 pediatric and 11 adult patients with aHUS.

In a prospective trial of adult and adolescent patients (n = 17) with plasma therapy-resistant aHUS, treatment with eculizumab eliminated the need for dialysis, sustained improvement in the estimated glomerular filtration rate (eGFR), and sustained improvement in hematologic parameters that correlate with aHUS disease activity. Five patients required dialysis at entry; four discontinued dialysis for the duration of treatment with eculizumab. Fifty-three percent of patients enrolled for a median duration of 251 days experienced a median improvement in eGFR of at least 15 mL/min/1.73 m2.

Hematologic normalization was defined as achievement or maintenance of normal platelet counts and LDH levels for at least 4 weeks. This was achieved in 76% patients for a median of 37 weeks (range: 25, 62+ weeks). The need for plasma therapy was eliminated in the majority of patients, and improvement in other laboratory markers of hemolysis and evidence for suppression of terminal complement activity were observed.

In the second prospective trial of adult and adolescent patients who required chronic plasma therapy (n = 20), eculizumab treatment resulted in plasma therapy cessation and maintained renal function, as indicated by stable dialysis requirements and eGFR parameters. Ninety percent of patients maintained hematologic normalization (median duration of 38 weeks) after discontinuing chronic plasma therapy.

The outcomes from a retrospective trial of 19 pediatric patients (median age: 6 years; range: 2 months to 17 years; n=20) were consistent with the outcomes observed in the prospective studies. Fifty percent of pediatric patients who previously required dialysis were able to discontinue dialysis after eculizumab therapy, according to the press release. Additionally, 7 of 19 (37%) patients exhibited an improvement in eGFR of at least 15 mg/min/1.73 m2, and 8 of 19 (42%) pediatric patients achieved or maintained normal hematologic parameters for at least 4 weeks. The requirement for plasma therapy was eliminated in the majority of patients.

The most frequently reported adverse events in aHUS single arm prospective trials (?15% combined per patient incidence) were hypertension, upper respiratory tract infection, diarrhea, headache, anemia, vomiting, nausea, urinary tract infection and leukopenia.
Eculizumab is associated with life-threatening and fatal meningococcal infections. The FDA has developed a Risk Evaluation and Mitigation Strategy (REMS) to alleviate this risk. Health care providers are required to enroll in a registration program, certify that they will counsel and provide educational materials to patients about the risks of eculizumab, and agree to promptly report cases of meningococcal infection, according to the press release. A boxed warning is included in the product labeling to inform health care providers and patients of the serious risk for meningococcal infection; it also recommends immunization with a polyvalent meningococcal vaccine.

Children treated with eculizumab may also be at increased risk for serious infections due to Streptococcus pneumoniae and Haemophilus influenza type b (Hib). Pediatric patients should also receive vaccinations for the prevention of these infections, according to ACIP guidelines.

The safety and efficacy of eculizumab has not been established for the treatment of typical hemolytic uremic syndrome, which is usually associated with an infection caused by bacteria producing shiga-toxin.

Eculizumab is administered as an intravenous infusion. The recommended dosing for adult patients with aHUS is 900 mg weekly for the first 4 weeks, followed by 1,200 mg weekly one week later, and 1,200 mg every 2 weeks thereafter. The dosage regimen for pediatric patients is based upon body weight, according to the FDA.
Fastest-Growing Companies in Troubled Industries
Sept. 12, 2011

A pharma company's growth can skyrocket once the FDA approves its leading drug. That's exactly what happened to Alexion in 2007 when it launched Soliris, a treatment that eases the symptoms of paroxysmal nocturnal hemoglobinuria, a rare terminal illness that destroys blood cells in the body. While only a few thousand in the U.S. suffer from PNH, Soliris is the only FDA-approved treatment.

Unlike big pharma companies that target widespread diseases such as diabetes and heart disease, Alexion wants to continue to carve out its niche by developing treatments for uncommon diseases. Moreover, the company wants to make game-changers -- drugs that don't just reduce symptoms but drastically improve patients' quality of life.

For now, that involves winning approval for Soliris to treat other diseases that harm people through the same basic mechanism as PNH. Alexion is trying to get FDA approval to treat a rare kidney disease by the fourth quarter of 2011.
Premiers Agree To Fund Expensive Life-Saving Drug Soliris
July 31, 2011
By Jeremy Shepherd

AFTER twelve years of fatigue and stabbing stomach pain, Garrett Shakespeare received the medical treatment he may have needed since childhood at Vancouver General Hospital on Monday.

Shakespeare, 23, suffers from paroxysmal nocturnal hemoglobinuria, an extremely rare and likely fatal disease that attacks red blood cells.

After doctors were mystified by a series of stomach aches, Shakespeare was diagnosed with PNH while in the fifth grade.

The disease is usually managed with blood transfusions, but after his doctors decided that treatment would be ineffective last year, Shakespeare was prescribed steroids. Prednisone helped with pain and anemia, according to Shakespeare, but the drugs left the North Vancouver lifeguard dealing with weight gain, acne, mood swings and skin irritations.

Shakespeare had been hoping to receive infusions of eculizumab, more commonly known as Soliris, since the treatment was approved in Canada two years ago. Unfortunately for Shakespeare, the annual price tag of approximately $500,000 put the drug out of reach until governments across Canada moved to provide public access to Soliris treatments last Friday.

The decision was announced the day Shakespeare turned 23.

"(I was) just hoping they'd made a decision soon because I didn't think I had that much longer left," he said.

Shakespeare suffered a blood clot in June, and said he hasn't been able to work in over a month.

Besides the blood clot, Shakespeare's field of vision has been limited by a cataract, forcing him to wear sunglasses nearly every time he's outside. Still, Shakespeare said conversations with his doctor and other PNH patients kept him optimistic.

"I knew that if I kept on pushing and kept making people aware that they couldn't let that many people in Canada just die," he said.

There are approximately 90 people in Canada with PNH.

After waking up at 5 a.m. and fielding interviews on Monday, Shakespeare made his trip to the hospital.

"They'd never given (Soliris) to anyone there before," he said.

The infusion took 45 minutes, but his stay was three hours, partially because hospital staff is very cautious when handling the drug. "They don't even mix it up until you're there because it's so expensive," Shakespeare said.

Shakespeare will need the treatment once every two weeks for the rest of his life.
"I don't really feel that different yet," he said, approximately 24 hours after the treatment. "My stomach doesn't hurt as much today as it did yesterday."

Shakespeare said he's scheduled to return to work on Wednesday, and was cautiously optimistic about feeling normal in about six months.

"It's a weird feeling, because I haven't felt normal for 11 or 12 years, so I don't know how I'm going to feel once it all takes effect."

Asked what helped him cope with his disease and the delay in receiving treatment, Shakespeare said with a small laugh: "Just not wanting to die, I guess."
Alexion Awards Scholarships to Waterbury HS Grads
July 26, 2011
By Rodney H. Brown

Alexion Pharmaceuticals Inc. has awarded eight graduating seniors with an interest in the life sciences or chemistry from four different Waterbury, Conn., public high schools a 2011 Alexion Scholarship, which will give the students each $4,000 paid over four years.

Based in Cheshire, Conn., Alexion (Nasdaq: ALXN) has now given scholarships to a total of 16 Alexion Scholars, company officials said in a release. The company partnered with the Connecticut Community Foundation to give out the scholarships. The 2011 batch of Alexion Scholars were chosen by their high school principals, based on factors such as their academic achievement and career plans. Of particular value was demonstrated excellence in life sciences and chemistry.

Last month Alexion won priority review from the U.S. Food and Drug Administration for its supplemental Biologics License Application for the company’s drug candidate Soliris to treat atypical Hemolytic Uremic Syndrome (aHUS), a rare blood clotting disease that can cause potentially fatal damage to the brain, kidney, heart and other vital organs.

In May, the company broke ground to enlarge its Smithfield, R.I.-based manufacturing facility by 20,000 square feet. The expansion should be done by year end or early next year, officials said at the time.
Alexion Tests Treatment to Respond to Germany’s *E. coli* Outbreak

June 20, 2011
By Michelle Lang

In response to an Enterohemorrhagic *E. coli* outbreak that hit Germany beginning in May, Alexion Pharmaceuticals Inc. and Alexion Pharma International Sàrl (APIS) have been approved by German regulators to begin a clinical trial of Soliris as a treatment for Shiga-toxin producing *E. coli* hemolytic uremic syndrome (STEC-HUS).

More than 35 deaths from EHEC and about 800 confirmed cases of STEC-HUS have been reported in Germany, the Robert Koch Institute indicated. STEC-HUS is considered an extremely rare and potentially fatal complication of EHEC, Alexion reported in a press release.

Soliris, known by Alexion as eculizumab, is already approved in the U.S., European Union and Japan as a treatment for paroxysmal nocturnal hemoglobinuria (PNH), a rare blood disorder. To treat STEC-HUS, Alexion has provided the drug free to doctors and hospitals in a clinical trial setting to address the outbreak, while maintaining a controlled evaluation.

Alexion, based in Cheshire, Conn., broke ground in May to enlarge its Smithfield, R.I.-based manufacturing facility by 20,000 square feet. The expansion is expected to add one-third of the company’s current staff of 125 by the end of 2012 with both office and research appointments.
We Cannot Stand By and Watch Them Die
Doctors Use Untested Medication for Deadly E. Coli
June 6, 2011
By Markus Gill

US drug manufacturer Alexion is sending free medicine to Germany to help doctors battling the most severe cases in the current E. coli outbreak. But the extent to which Eculizumab can help remains unclear.

There is no effective treatment for E. coli patients who are currently suffering from epileptic seizures, kidney failure or strokes. So far, doctors in Germany have primarily used dialysis in an attempt to remove the bacterial toxins from the body as they seek to treat the widespread outbreak of a particularly deadly version of the E. Coli bacteria.

For several days now, hospitals have been experimenting with a largely untested drug called Eculizumab, which has the brand name Soliris. It remains unclear whether it can help.

The hope surrounding this remedy is largely due to the work of Dr. Franz Schäfer, a nephrologist at the University of Heidelberg. Last fall, the condition of one of his young patients, three-year-old Sophie, was getting progressively worse. The girl was infected with E. coli, suffering from seizures and hemiplegia, and blood plasma exchanges offered no improvement.

"Finally, we placed all our hopes on one possible solution and gave her Eculizumab," Schäfer says.

The drug is known among kidney researchers, but has been neither tested nor approved for treating E. coli infections. Schäfer was surprised at how well young Sophie responded: Within 24 hours, the girl's condition had improved dramatically. After three days, dialysis was no longer necessary, and after nine days Sophie was discharged from the hospital.

"I'm still in touch with the family," says Schäfer. "Sophie is attending preschool just like any other child her age."

Doctors Desperate for a Cure

Schäfer was so impressed with Eculizumab that he offered to write an article about the case for the prestigious New England Journal of Medicine. The magazine had scheduled to publish Sophie's case, along with two similar stories about patients from Paris and Montreal, in a few weeks. But then came the E. coli alarm in Germany, and the editors decided to immediately put Schäfer's report online on May 25.

Many doctors currently treating patients infected with E. coli are desperately clinging to this medical article -- although the description of a cure for three children does not allow for more generalized statements about the drug's effectiveness. Nonetheless, it is currently being used in all hospitals with severe cases. At Hamburg's University Medical Center (UKE) last Friday, 49 patients were treated with Eculizumab, while 28 in Kiel and 20 in Hanover were administered the drug.

Professor Rolf Stahl at UKE says: "We are treating the patients with this drug because we cannot simply stand by and watch them die, suffer damage to their central nervous systems, or lose their kidney function." Stahl and his colleagues in Kiel and Hanover, however, are not observing such resounding...
successes as reported by their colleague Schäfer in Heidelberg with the three-year-old Sophie. A marked improvement after 24 hours? Stahl merely shakes his head in disbelief.

A Risky Medical Experiment

Eculizumab is one of the most expensive drugs in the world. A month of treatment in Germany costs over €37,000 ($54,000) -- per patient. The drug is only approved for a rare blood disease called paroxysmal nocturnal hemoglobinuria (PNH). All severely ill E. coli patients who want to receive this medicine have to be advised that they are participating in a risky medical experiment.

Eculizumab is produced by the US pharmaceutical company Alexion, which reported sales of over $540 million (€372 million) last year with the product, a 40-percent increase over the previous year. After the outbreak of the current E. coli crisis, the company agreed to supply Eculizumab to Germany for free. Alexion Vice President Thomas Bock tells SPIEGEL that if the numbers of patients were to sharply rise in Germany, even a fivefold increase in the amount delivered would be no problem.

"We are currently communicating on a daily basis with the physicians and authorities in Germany, but we also don't know what is ideal," Bock admits.

Bock says that the effect on blood vessels can last for months, even if patients with life-threatening hemolytic-uremic syndrome (HUS) are apparently free of symptoms. About one-third of those infected in the E. coli outbreak are suffering from HUS, which can lead to kidney failure. When asked whether free deliveries of the drug would also apply for treatments that last for months, Bock replied: "Our commitment is to do whatever is necessary to overcome the crisis."

Bock justified the medicine's high price with the company's extremely high-risk strategy of only developing drugs for rare and hopeless diseases.

Eculizumab, however, is the only drug that Alexion markets.
Require the State To Take Care of Rare Diseases (Chile)
April 11, 2011
By Melissa Quillio

A protest held in front of La Moneda people suffering from rare diseases and their families. Isapres not provide coverage for treatments which have a high cost, unaffordable for average income.

The Federation of lysosomal Sick Chile (Felch), the Association of Tyrosinemia and the Association of PNH (Paroxysmal Nocturnal Hemoglobinuria) organized a march on Monday in Constitution Square, in front of La Moneda, to require the State treatment coverage for rare diseases.

According to the president of the Felch, Myriam Estivill, 180 people suffering from rare diseases in Chile. Of these, 25 have PNH, and 11 children Tyrosinemia.

The symptoms of these diseases depend on the cases but what stands out is the fragility of the bones, cardiovascular problems, a glass 20 to 30 times higher than normal or very low defenses. These syndromes prevent patients enjoy a normal life and high costs of treatments needed to alleviate their conditions of life.

COST TO ENJOY A NEARLY NORMAL LIFE

"The disease does not look at social stratum of people"-indicates Estivill, adding that even high-income families can pay for these treatments.

One such treatment involves infusing the patient with a serum intravenously every fifteen days. The monthly cost of this medical intervention is between 5 and 15 million pesos. This price variation is explained by the weight of the patient: "A little boy takes less serum 80-kg adult," says the president of the Felch.

Participants in the march today are asked to include these rare diseases within the coverage of a national plan.

There is a bill that is still sleeping on the administrative intricacies of Government. These groups called for "the President rush his ministers to pass the bill in Congress and eight years ago that the project is in process. Meanwhile, the diseases continue to impact the lives of patients. "

CAMILO CASE, A FIGHT WITH THE ISAPRES

The protest came the family of Camilo Negrete, 26 year old who was the first case of PNH diagnosed in Chile.
There is no certainty as to the origin of this disease, the researchers say that 35% of patients die within the first five years after diagnosis and this figure increases to 50% mortality during the first ten years.

Angélica Moscoso, Camilo's mother explains the symptoms of the disease that is destroying the lives of his son.

PNH destroys red blood cells, Camilo also suffered from multiple thrombosis [blood clots], anemia and liver damage, among other things.

He added that "there are days in which [Camilo] arises when well, others which stays in bed, especially during the winter. [...] A lot thinner and not assimilate the vitamins in food."

"Camilo was a student of education in dance, sports fan, cycling and physical activity," say their relatives. And today, there are days when you cannot even lift.

"Every day you die a little, and die consciously," said the mother. However, Angelica said his son "has faith, he talks about getting married, having children, going to roll, like any normal person." The reason for this hope? Le existence of an effective drug to help Cameron to live with their disease.

This drug, if you can not cure Camilo, you can return your quality of life. The Soliris is the only drug that has shown significant reduction in risk of thrombosis, and improved survival in patients with PNH, "said Dr. Paul Ramirez, a doctor treating the patient.

Angel explains that "this drug does not exist in Chile and [...] the pockets of relatives are not enough for the price of treatment." It adds that "The Isapre does not disburse the money needed. We have sent many letters to the institution with the support of the organization [PNH], but we had no response whatsoever."

Antonio Negrete, Camilo's father, for thirty years of contributions in the Isapre Consalud, whose plan includes hospital coverage 90%, claims the right to life of his only son.

According to Angelica, Isapre is "a private entity for profit and not seeking health support [people]."

She concludes, referring to the existence of effective medications for your child and the other patients, that "science advances but Isapres not."
Alexion Acquires Taligen for $111M
Jan. 31, 2011
By Julie M. Donnelly

Taligen Therapeutics, an early-stage developer of drugs to treat eye diseases, has been acquired for $111 million in up-front payments by Alexion Pharmaceuticals Inc. (Nasdaq: ALXN).

Taligen will also be eligible for additional milestone payments.

Privately held Taligen, based in Cambridge, is working on potential treatments for patients with eye diseases including age-related macular degeneration, as well as other research into inflammatory conditions.

“Taligen’s talented scientists and impressive technology will enhance Alexion’s world-class staff and breakthrough research and development programs, substantially increasing our ability to develop first-in-class therapies for patients with severe diseases,” Alexion CEO Dr. Leonard Bell stated. “As product development opportunities continue to expand, we look forward to increasing the quality, speed, and throughput of our combined current and future development programs for the benefit of patients worldwide.”

In connection with the deal, Cheshire, Conn.-based Alexion will launch a Cambridge, Mass.-based Translational Medicine Group, which will be headed by Abbie Celniker, CEO of Taligen. Her new title will be head of translational medicine at Alexion. Celniker had been CEO of Taligen since 2008.

“Alexion has proved how highly innovative science can result in life-transforming therapies for patients with debilitating disorders,” Celniker said in a statement. “We are excited to be combining our research and development capabilities with Alexion’s global team with the goal of accelerating the investigation of novel molecules from our combined portfolios and developing additional first-in-class compounds.”

Alexion’s stock was up slightly on the news, trading at $83.11 in late-morning trading Jan. 31, up from $82.34 at the previous close.
AFTER nearly two years of political lobbying, the Federal Government has finally agreed to subsidise treatment that will save the life of Deception Bay resident Jacqui Scott’s 31-year-old daughter.

Linda Charlton is one of about 70 Australians believed to be affected by paroxysmal nocturnal haemoglobinuria (PNH) and was diagnosed in 2005.

Ms Charlton said the benefits of the treatment were immeasurable.

``I now have more energy, my organs are under much less stress and Soliris controls PNH to the point where it doesn’t affect me every minute of every day,” she said.

``It means shorter hospital visits, no need to take a cocktail of 22 drugs, vitamins and supplements a day and be unable to eat, sleep or socialise.”

Ms Scott said subsidising Soliris meant people such as her daughter and their families could have peace of mind.

``It means to some extent I can stop worrying and although it’s not a cure, it will save her life,” she said.

``There is still a long fight ahead to make sure all the people affected get access to the treatment but this is a great first step.”

The treatment, called Soliris is worth $480,000 for a years’ supply and became available on the Life Saving Drugs Program from January 1.
Alexion’s Bell 2nd in “Best CEO” poll
Dec. 16, 2010

Cardiologist Leonard Bell, CEO and co-founder of Cheshire drug maker Alexion Pharmaceuticals, is the 2010 runner up in TheStreet.com's "Best Biotech CEO" of the year poll.

Bell came in second, with 39 percent of the vote, behind winner Mitch Gold, who led Dendreon through a topsy-turvy Food and Drug Administration approval process for the prostate cancer therapy Provenge. Gold got 52 percent of the votes.

Third place went to Neurocrine Biosciences chief Kevin Gorman, with support from 9 percent of readers.

Six hundred forty-two votes were cast overall for the Best Biotech CEO nominees, a respectable turnout but far below the 2,100 votes cast for the companion "Worst Biotech CEO" poll, TheStreet.com said.

As the winner, Gold gets TheStreet's coveted Swanson Trophy, named in honor of Robert Swanson, Genentech's founding CEO.
Plea for Life-Saving Treatment Finally Heard  
Nov. 19, 2010

The plight of 100 Australians living with Paroxysmal Nocturnal Haemoglobinuria (PNH) – an ultra-rare and life-threatening blood disease – was finally acknowledged by PM Julia Gillard and Health Minister, The Hon. Nicola Roxon MP after representatives of the PNH community attended Question Time in Parliament yesterday (Wednesday, November 17, 2010).

The President and Secretary of the PNH Support Association of Australia (PNHSAA), Ms Linda Charlton and Mrs Jenny Sturrock, were in Canberra this week seeking support for Government-subsidised PNH treatment from Australia’s MPs. Funding for Soliris® – the only effective treatment for PNH – was first recommended by the Pharmaceutical Benefits Advisory Committee (PBAC) in March 2009. However, the Federal Government is yet to approve the subsidy despite a second positive recommendation from the PBAC and 18 months of Government lobbying by the PNHSAA.

Ms Charlton and Ms Sturrock were at last given the opportunity to personally meet separately with Gillard and Roxon yesterday to highlight the importance of affordable access to effective PNH treatment through the Government’s Life Saving Drugs Program (LSDP).

According to Ms Charlton, the subsidy is close, but still out of reach.

“Access to effective PNH treatment has been a long and arduous battle, and in the meantime, Australian lives have hung in the balance.

“The Prime Minister Julia Gillard and the Federal Health Minister, Nicola Roxon, have personally reassured me that the Government is acting with every urgency to grant the PNH community access to Soliris®,” said Ms Charlton.

“I sincerely hope that the only remaining step of Cabinet Approval is expedited so that the PNH community can receive treatment well before Christmas and look forward to a stable future.

“We plan to continue to work every day until this treatment is funded on the LSDP,” Ms Charlton said.

“The PNHSAA is grateful to all Senators and MPs from various parties who have taken the time to meet with us, and support our campaign.”

Soliris is the only effective treatment for the blood disease which is characterised by abnormal and uncontrolled haemolysis (destruction of red blood cells). The treatment acts to suppress the crippling symptoms and complications associated with PNH, and significantly reduces the risk of premature death.
Alexion Pharmaceuticals May Have a Bigger Market for its Drug Soliris
June 24, 2009
By Benjamin N. Gedan

Tanks in the buffer holding room at Alexion Pharmaceuticals in Smithfield are one step in the process for making the drug Soliris, which currently has one approved use, treating a rare disease.

It is still a one-hit wonder, dependent upon a single drug that treats a rare illness.

But Alexion Pharmaceuticals, the Connecticut drug maker building its first production plant in Smithfield, may soon have a bigger audience for the sole product in its catalog.

Earlier this month, researchers presented preliminary findings from a study at the Mayo Clinic in Minnesota demonstrating that Alexion’s drug Soliris helps patients accept kidney transplants even when they have antibodies guarding against the donor tissue.

The drug inhibits part of the immune process that damages transplanted kidneys, protecting the organ by disabling the so-called complement system, an immune response that controls tissue destruction.

“These results are great news because they mean that none of the treated patients developed the most serious complication that normally threatens the transplant,” the lead author of the study, Mark Stegall, said in a statement after presenting the results at the American Transplant Congress in Boston. “This represents a quantum leap in this area.”

Soliris performs a similar function for patients with paroxysmal nocturnal hemoglobinuria, or PNH, a disease that causes a patient’s immune system to destroy red blood cells, leading to severe anemia and blood clots.

For now, that is the only approved use, and the patient pool is exceedingly small. But because Soliris is the only treatment for these patients, Alexion has been able to generate consistently strong revenue.

In the first three months of 2009, the company reported $14.5 million in net income, up from a $4.2-million loss in the first quarter of 2008. Soliris sales brought in $81.3 million, almost double the $45.5 million the drug generated in the same period in 2008.

The U.S. Food and Drug Administration approved Soliris in March 2007, and it earned a go-ahead from the European Commission in June of that year.

In 2009, Alexion has received permission to sell Soliris in Canada and Australia. In April, it submitted an application to market Soliris in Japan. Health authorities there have already classified the medication as an “orphan drug,” meaning Alexion would have a 10-year monopoly if Soliris is approved.

Last Wednesday, Alexion announced that Soliris had received the 2009 Prix Galien France Award in the category of medicines for rare diseases.
PNH is so rare that many doctors miss the symptoms, which typically begin when patients are in their early 30s. So Alexion has invested heavily in teaching oncologists and hematologists about the disease and pushing for regular testing of high-risk patients.

It has also sponsored studies to demonstrate more effective techniques for identifying PNH sufferers. In May, the company said a study that used a new high-sensitivity test found PNH cells in a majority of patients with bone marrow failure syndromes.

Lately, however, Alexion has also been focusing on expanding the uses for Soliris for other diseases that cause the immune system to malfunction.

It has begun four clinical studies, for example, that use Soliris to treat patients with atypical hemolytic uremic syndrome, or AHUS.

“We’re driving hard now our clinical development of the product in that disease,” Stephen P. Squinto, Alexion’s head of research, said in an interview. “We tend to look at our drug Soliris as a pipeline unto itself.”

Michael Aberman, a biotechnology analyst for Credit Suisse, sees big sales potential from AHUS. “We would be aggressive buyers of Alexion,” he said in a May 26 research note.

Alexion is also studying the potential use of Soliris for treating dense deposit disease, as well as the neurological diseases myasthenia gravis and multifocal motor neuropathy.

In a research note on June 8, Morgan Stanley analyst Sapna Srivastava said Soliris may also prove effective for heart transplant patients. “Success in additional indications,” Srivastava said, “could more than double Soliris’s potential.”

As it puts the finishing touches on its $116-million plant in Smithfield, Alexion also hopes to feed its drug pipeline.

One experimental drug produced in Smithfield, Anti-CD200, is already being tested in a study at several hospitals in the United States to treat patients with a form of leukemia who have not responded to chemotherapy.

Alexion has kept its headquarters in Connecticut, where on Thursday it plans to unveil 1,738 solar panels it installed on the rooftop of its office and research complex. But its investment in Rhode Island has been seen as a key success in efforts to expand the state’s health sciences sector.

There is ample capacity in the complex for producing Soliris, even if the patient pool grows significantly. But if other drugs prove successful they, too, would likely be produced in Rhode Island.

Alexion’s continued growth is considered especially vital because the state’s other major drug maker, Amgen, has been struggling in recent years.

State lawmakers say the industry has great potential.


Describing Rhode Island as a “small state with a big appetite for biotech,” the guide praised the state’s research and development tax credits as well as its location.

Rhode Island’s proximity to “the East Coast biotech universe couldn’t be more strategically well-placed,” the publication says. It also cites “its comparatively less expensive cost-of-living and less stressful milieu” that “allows businesses to go about their business, but in a more tranquil setting.”
Alexion's Soliris™ Honored at Prix Galien USA

October 2008

Alexion Pharmaceuticals, Inc. of Cheshire has received a Prix Galien USA 2008 Award for Best Biotechnology Product for Soliris® (eculizumab). The Award recognizes the scientific innovation represented by the complement-inhibition technology of Soliris®, and the impact the drug is having on the lives of patients with paroxysmal nocturnal hemolglobinuria (PNH), a rare, debilitating and life-threatening blood disorder.

Soliris® is a first-in-class complement inhibitor that selectively blocks the formation of terminal complement, a component of the normal immune system. Patients with PNH lack naturally occurring proteins that ordinarily prevent terminal complement from causing the red blood cell destruction (hemolysis) that is central to the serious morbidities and mortality associated with PNH.

"We are living in the midst of a biological revolution and the breakthrough agents honored by the Prix Galien USA illustrate the substantial research and development necessary to bring the fruits of that revolution in molecular medicine to the clinic," said Gerald Weissmann, M.D., Prix Galien USA committee chair, New York University professor emeritus and editor-in-chief of The FASEB Journal (Federation of American Societies for Experimental Biology).

"We deeply appreciate this honor, which recognizes more than 15 years of dedicated complement-based research. The Prix Galien award is especially gratifying for the scientists, physicians, patients and advocates involved in the discovery and development of Soliris®," said Leonard Bell, M.D., Chief Executive Officer of Alexion.

"We are committed to making sure that every patient with PNH who can benefit from Soliris® will have access to Soliris®. We are building on the success of Soliris® by increasing our understanding of PNH and by evaluating the promise of complement inhibition for the treatment of other rare and life-threatening kidney, blood, transplant and neurologic disorders."

The Prix Galien Award recognizes the technical, scientific and clinical research skills necessary to develop innovative medicines, and is considered the industry's highest accolade for pharmaceutical research and development — equivalent to the Nobel Prize. Prix Galien was first established in 1970 by French pharmacist Roland Mehl and was inaugurated in the United States in September 2007. The Prix Galien USA awards committee of 11 individuals includes seven Nobel Laureates, founders of major biotech companies and editors of world-renowned biology journals.
Alexion Pharmaceuticals Expanding
Sept. 12, 2007
By Benjamin N. Gedan

Alexion Pharmaceuticals is rapidly expanding its sales force and launching programs aimed at increasing the diagnosis of a rare blood disease treated with Soliris, a drug the company makes, its chief executive officer said yesterday.

Alexion recently increased its sales force by 45 percent, up to 32 sales executives from 22, CEO Leonard Bell said in a speech at the Bear Stearns 20th Healthcare Conference, in New York City.

The company, based in Cheshire, Conn., is building a $47-million biomanufacturing facility in Smithfield at the former Dow Chemical plant. It now produces the drug in contract laboratories.

“Based upon success in the first quarter, we have increased our investment in our U.S. sales force by increasing the number of reps in the field,” Bell said. “The purpose of this is to provide greater geographic reach.

“We are pinpointing individual patients, one patient at a time.”

Alexion began selling Soliris in the United States in April. As of June 30, Bell said, 295 patients were taking the medication to treat paroxysmal nocturnal hemoglobinuria, a disease that destroys red blood cells and can cause severe anemia, blood clots and damage to the kidneys and liver.

The illness, known as PNH, is considered rare. But Alexion officials say many cases go undiagnosed.

The company is launching a range of “diagnostic initiatives,” dispatching representatives to discuss PNH with doctors in Europe as part of “disease awareness programs,” and establishing a “clinical support team” in the United States for a similar purpose.

In July, Alexion announced its purchase of the FLAER technology, a PNH test that the company says will result in more positive diagnoses.

Though FLAER was introduced at least five years ago, it is used at only 12 centers in Europe and the United States. Under Alexion’s ownership, Bell said, it could become more widely accepted.

Alexion is also attempting to screen 10,000 patients with aplastic anemia and myelodysplastic syndromes to determine if they have PNH.

FLAER, Bell said, “provides a very sensitive, rapid and reliable diagnostic test for PNH.”

“Diagnosis today is relatively infrequent,” he said. “They can’t receive effective therapy if they’re not diagnosed.”

In June, Alexion received permission to sell Soliris in 29 European countries, and sales in the United Kingdom and Germany are expected to start before the end of the year.

Sales in the rest of Europe are scheduled to begin next year, and the company is expanding its headquarters in Switzerland and France in advance of the rollout.
There is no other treatment for PNH, and Alexion is seeking permission to sell its drug in Australia and Japan. "We have also expanded our global ambitions," Bell said.

Already, U.S. sales are transforming the company's financial standing.

Revenue in the second quarter of the year reached $10 million, and losses declined to $22 million, down from $30 million in the last three months of last year.

That performance has bolstered the company's stock, as well.

Shares of Alexion are up 82 percent, or $29.32, since March 5. The stock closed at $65.09 yesterday, up 23 cents, or 0.4 percent.

The company plans to announce its third-quarter earnings next month.
Unapproved Drugs Ignite Life-and-Death Debate; Lawsuit Pits Desperately Ill Against Hard Bureaucratic Realities
April 2, 2007
By Rita Rubin

Baltimore -- On a blustery January day, Rhett Davis relaxes in a recliner at Johns Hopkins Hospital as clear fluid drips from a hanging bag, through a tube and into a vein in his left arm. The 30-minute process is anticlimactic, considering what his family and his doctor went through to get the drug for him.

Davis, 32, was diagnosed with a rare blood disorder called paroxysmal nocturnal hemoglobinuria, or PNH, when he was 17, but his health didn't begin to deteriorate until about two years ago. The blood clots that kill nearly half of PNH patients destroyed his liver. His kidneys failed.

Since the week after Thanksgiving, though, Davis had been making six-hour round trips from his home in Kingston, Pa., to Baltimore for intravenous doses of eculizumab, the first drug shown to work against PNH. It wasn't approved by the Food and Drug Administration until March 16. Without the drug, Davis might have died by then, says his doctor, Robert Brodsky.

Every day, patients with life-threatening illnesses run out of FDA-approved treatments. In desperation, some seek drugs that have not yet been approved by the agency and, in some cases, have not even been widely tested. These patients argue they have nothing to lose and are willing to risk taking even a little-studied drug that offers a glimmer of hope.

But FDA officials, as well as many doctors, are concerned that even terminal patients are as likely to be harmed as helped by such drugs. And manufacturers and researchers worry that easy access to experimental drugs could stifle the development of new treatments by shrinking the pool of patients available for clinical trials.

Davis is typical of patients with life-threatening diseases who have been able to obtain experimental drugs outside of clinical trials. He didn't have time to wait for a new drug to arrive on the market, and he didn't meet the strict eligibility criteria for trials of drugs not yet approved.

Frustrated with the cumbersome process for obtaining experimental drugs -- which requires dealing with the FDA bureaucracy as well as drugmakers and research institutions -- a patient advocacy group has taken the FDA to court. The group argues that mentally competent terminally ill patients have a right to get such drugs.

Howard Fine, chief of the brain cancer branch at the National Cancer Institute, says he understands both sides of the debate over experimental drugs.

"Ethically speaking," Fine says, noting that he's talking only for himself, "who has the right to say to a patient: You have no right to try this medicine even though you're dying, even though you're well informed?"

On the other hand, he says, giving unapproved drugs to anyone who wants them would be a logistical nightmare: "Where are (drugmakers) going to send these drugs? The local doc down the street? And who's going to educate the doctor?"
Fine says he sees 2,000 to 3,000 brain tumor patients a year, the "vast majority" of whom will die within the next year. Sometimes they don't qualify for a clinical trial. Sometimes they can't deal with the hassle of it, especially if they live far from the National Institutes of Health's campus in Bethesda, Md. Fine says he gets calls from parents of dying children who plead: "Just give me this drug. What have we got to lose?"

A verdict in favor of the plaintiffs in the lawsuit against the FDA could eliminate patients' need to get the agency's permission to take experimental drugs. But many patients might still find roadblocks in cost, limited supplies and manufacturers' liability concerns.

On March 1, the U.S. Court of Appeals for the District of Columbia Circuit heard oral arguments in the case. Judge David Tatel got right to the point: "Who decides what's terminal, and how do you decide what lifesaving is? Suppose someone has a disease that will result in death in five or 10 years. Is that terminal?"

The court isn't likely to rule for several months, but the case already has divided doctors and patient advocacy groups.

No 'slam-dunk' decision

"There are some good arguments on both sides," says Frank Palumbo, a lawyer and pharmacist who heads the University of Maryland School of Pharmacy Center on Drugs and Public Policy. "It's clearly not a slam-dunk for anybody."

The lawsuit over the FDA's barriers to the use of experimental drugs comes at a time when the agency also is under fire from critics who say it doesn't do enough to keep unsafe drugs off the market.

Opponents of easier access to experimental drugs argue that the drugs' early promise might not hold up. (For example, fewer than 10% of cancer drugs evaluated in Phase I trials, the first human tests, make it to market, the FDA says.) Instead of saving lives, some analysts say, drugs early in the developmental pipeline could end up shortening them.

"You don't want to put more weight than is appropriate into what a Phase I study shows," says bioethicist Arthur Caplan of the University of Pennsylvania. "Phase I studies are basically just trying to make sure you don't poison anybody by exposing them to stuff."

At best, dying patients might gain a few months of life from drugs that have undergone only Phase I testing, says Caplan, who supports making it simpler for patients to seek FDA permission to use experimental drugs.

"I'm not arguing that six months isn't good," Caplan says. But "just as it's good to live six more months, it's also good not to lose six months."

If the FDA loses the lawsuit, "companies could come along and sell false hope to patients," says Allen Lichter, CEO of the American Society of Clinical Oncology (ASCO), which submitted a "friend of the court" brief in February siding with the FDA.

The brief was co-signed by the American Academy of Medical Colleges and the National Coalition for Cancer Survivorship, which describes itself as the nation's "oldest survivor-led cancer advocacy organization."

"Yes, it's a little bit hard to get these drugs," Lichter says. "And to some extent, that's the way it should be. This shouldn't be as easy as walking down to the drugstore and buying a package of Tylenol."
Providing experimental drugs to all comers could hamper clinical trials, says Alan Goldhammer of the Pharmaceutical Research and Manufacturers of America (PhRMA), the prescription drug industry’s main trade group.

"Companies must be careful to make sure that after making experimental drugs available to more patients, they are able to find enough volunteer patients willing to abide by the restrictions and rules of a clinical trial," Goldhammer said in a statement.

But proponents of easier access to experimental drugs say patients are dying because they don't meet clinical trials’ strict criteria.

**Abigail's story**

Abigail Burroughs was one of them, says her father, Frank Burroughs. Abigail had tumor cells that contained an enzyme called the epidermal growth factor receptor, or EGFR, which acts as an "on" switch, triggering cells to divide and spread without dying.

At the time, Erbitux and Iressa were being tested against tumors with EGFR in the colon and lung, respectively. But her tumor was in the head and neck, so she was ineligible.

Both drugs eventually won FDA approval.

After Abigail died in June 2001 at age 21, Frank Burroughs co-founded the Abigail Alliance for Better Access to Developmental Drugs. The Fredericksburg, Va.-based organization and the non-profit Washington Legal Foundation brought the lawsuit against the FDA that seeks increased access to experimental drugs.

"The point we make in our lawsuit is really an important one: The decision should be made by the patient in consultation with their doctor," Burroughs says. "We feel the FDA should not be overly paternalistic."

Emil Freireich, director of adult leukemia research at the University of Texas M.D. Anderson Cancer Center, agrees. When Freireich heard that ASCO, which he co-founded, had filed its court brief supporting the FDA's limits on experimental drugs, "I almost cried," he says.

"It's a really sad, sad day when an organization that represents all the oncology physicians in the world sides with the FDA over the interest of patients," Freireich says.

"I asked five leading (scientific) investigators to side with Abigail," Freireich says. "They all demurred, because they're scared the FDA is going to kick them in the butt."

**'Compassionate use'**

Rhett Davis obtained eculizumab through a treatment "IND" -- short for investigational new drug -- which is like a clinical trial for a single patient.

Just before it approves drugs, the FDA sometimes makes them available to groups of patients. The two-decade-old practice, known as "compassionate use," resulted from pressure by AIDS activists who demanded access to experimental drugs to treat what was then an imminent death sentence.

Brodsky, Davis' doctor and chief of hematology at Johns Hopkins, co-wrote a New England Journal of Medicine report in September on a Phase III trial that found eculizumab reduced the destruction of red blood cells in PNH patients and their need for transfusions.

Only those who were dependent on blood transfusions could enroll in the trial. When it was open for enrollment, Davis didn't qualify because he wasn't dependent on transfusions. By the time he required transfusions and became eligible for the trial, it was full.
As Davis lay in a hospital in Wilkes-Barre, Pa., last November -- his skin tinged yellow because of his failing liver, fluid accumulating in his abdomen because of his failed kidneys -- his family pressed their senator and congressman to help them obtain eculizumab.

Meanwhile, Brodsky applied to Alexion, the drug's maker, the FDA and the Johns Hopkins institutional review board, which must approve all human research at the hospital, so Davis could get the drug.

Davis could be considered for a lifesaving liver transplant only if he received the drug and it worked, Brodsky says. The day before Thanksgiving, Davis learned he would get his eculizumab.

Even if the Abigail Alliance wins its lawsuit against the FDA, the case might have a minimal effect on patients, Palumbo says. "It might be that (only) people with money and access to other professionals might be the real winners."

The lawsuit asks that terminally ill patients be allowed to pay for promising drugs that are not yet on the market. In December, the FDA proposed revisions to rules about how drugmakers can charge for experimental drugs. The ability to recoup costs might spur smaller companies to provide more drugs outside trials, FDA Deputy Commissioner Janet Woodcock says.

Still, no matter the verdict, even patients who could pay for experimental drugs might find makers unwilling to provide such drugs.

"Often, we are given as the reason" why patients can't get an investigational drug, Woodcock says. "But, if really questioned, the companies will say, 'We're not giving it out.'"

PhRMA's Goldhammer notes that companies often make just enough of such drugs to use in clinical trials.

Liability concerns loom large, because the FDA prohibits patients who get an experimental drug outside a clinical trial from waiving their right to sue the drugmaker if they have adverse effects, Baltimore lawyer Mark Gately says.

Gately spoke last month in Washington at a forum on the Abigail Alliance lawsuit. "The very risk of being sued," he says, "is a major disincentive to providing drugs in this situation."

A success story

Davis could be considered an example of what can go right when a desperately ill patient gets a drug before it goes on the market.

The call came Feb. 6, more than two months after Davis began taking eculizumab and began to show improvement.

By that night, Davis was having liver transplant surgery at Johns Hopkins. He left the hospital nine days later. Now, he's planning to return to work as an auditor by summer.

"He is perfect," Brodsky says. "His PNH, you wouldn't even know he has it anymore. His kidneys are fine. His liver is fine. No more fluid on him. He's not that horrible color he was.

"It was really the drug that made this possible."
Alexion Gets FDA Nod for Soliris; First Drug for PNH
March 19, 2007
By Jennifer Boggs

Alexion Pharmaceuticals Inc.'s monoclonal antibody product Soliris won FDA approval in paroxysmal
nocturnal hemoglobinuria (PNH), making it the first therapy indicated for the rare genetic disorder.

The Cheshire, Conn.-based firm, which already has recruited a 25-member sales team plus 15 medical
science liaisons, will waste no time getting the drug to patients. Soliris' launch is expected "within two
weeks," said Alexion CEO Leonard Bell.

The news boosted Alexion's shares (NASDAQ:ALXN) $2.78, or 7.4 percent, Friday, to close at $40.15,
though investors still await the drug's pricing, which analysts have projected from $100,000 up to
$300,000 in annual costs per patient.

Bell said disclosure of pricing and other marketing details will be announced by the company later this
month during a conference call to outline its U.S. commercialization strategy. However, the company did
introduce Soliris OneSource, a treatment support service to educate PHN patients and physicians on the
diagnosis and treatment of the disease.

As the first PHN therapy to make it to market, Soliris (eculizumab) is indicated as a treatment for
virtually all PNH patients. The disease, which is estimated to affect about 8,000 to 10,000 people across
North America and Europe, is characterized by hemolysis, the chronic destruction of red blood cells. By
selectively blocking terminal complement, the part of the immune system implicated in PNH red blood
cell destruction, Soliris succeeded in reducing hemolysis in every patient treated in the clinic.

"One hundred percent of the patients receiving Soliris had objective responses," Bell told BioWorld
Today, adding that the drug also was associated with improvement in PNH-associated symptoms, such
as anemia, and that patients reported improvements "in their overall quality of life."

Prior to Soliris, the only treatment options for PNH patients have been palliative, such as vitamins,
transfusions and blood-thinners. The disorder generally manifests in patients' early 30s, and, once
diagnosed, median patient survival is 10 to 15 years. The most common cause of death for PNH patients
is blood clots, another area in which Soliris demonstrated positive efficacy. Patients treated with the drug
were less likely to suffer thrombosis compared to those on placebo, Bell said.

Data from a 26-week Phase III study, which formed the basis for Alexion's biologics license application
submitted in September, showed that Soliris significantly reduced hemolysis in every treated patient, and
that reductions occurred within one week of initiating therapy and were sustained for up to 54 months
with continued dosing. Preliminary data, reported in January 2006, also showed that the median
transfusion rate dropped from 10 units per patient with placebo to 0 units per patient with Soliris, and that
hemoglobin stabilization was achieved by 49 percent of patients in the Soliris group compared to none
receiving placebo. (See BioWorld Today, Jan. 27, 2006, and Sept. 22, 2006.)

According to study data, the most common adverse events were limited to headache, runny nose, back
pain and nausea, though Soliris' product label includes a warning about a potential increase in
meningococcal infections and recommends that all patients be vaccinated at least two weeks before
starting treatment.

Outside of the U.S., Alexion has a pending marketing authorization application in Europe, and expects a
regulatory decision "sometime in the summer," Bell said. The company already has started coordinating
its commercialization activities there, and plans to handle all marketing itself on a worldwide basis.
"Our objective is to be on the market in 40 countries within three years of launching in the U.S., so around 2010," he said.

Though Alexion has an early stage pipeline, and has done preclinical work on Soliris in additional indications, those programs will take a backseat to Soliris' upcoming launch, Bell said. "We're a small company, so right now all our efforts are focused on that."

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FDA Approves Alexion Drug for Rare Blood Disorder
March 16, 2007
By Jennifer Corbett Dooren

WASHINGTON -- The Food and Drug Administration on Friday approved a drug by Alexion Pharmaceuticals Inc. to treat a rare blood disorder.

The drug, Soliris, is the first product approved to treat paroxysmal nocturnal hemoglobinuria, or PNH, which can lead to disability and premature death.

Soliris was granted Orphan Drug status, which gives manufacturers incentives to develop treatment for rare disorders, or conditions that affect fewer than 200,000 people in the U.S.

PNH, which usually develops in adults, is a disease characterized by red blood cells that develop abnormally.

Depending upon the severity of the disorder, patients with PNH may have pain, fatigue and debilitating weakness, the need for frequent blood transfusions, blood clots, and life-threatening or fatal strokes, heart attacks and intestinal disease, the FDA said.

Soliris does not cure PNH, but treats the breakdown of red blood cells, the most common characteristic of PNH.