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About IG Living

IG Living is the only magazine dedicated to bringing comprehensive healthcare information, immune globulin information, community and reimbursement news, and resources for successful living directly to immune globulin consumers and their healthcare providers.

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Finding Support

MOST PEOPLE — especially those with diseases or disabilities — feel the need to bond with others who share similar experiences. For this reason, thousands of self-help and professionally-operated support groups have been launched around the world over the years, fulfilling people’s desire for companionship and information. While most support groups were originally face-to-face groups, since 1982, the Internet has been a hotbed for their launch, allowing individuals to share messages 24-7. Unfortunately, despite the plethora of groups in existence, there is always a need for more, especially as the number of rare diseases that affect relatively few people — who are often states and even continents apart — continues to grow.

The IG Living staff is frequently asked where support groups can be found. And, while we strive to connect you with them, sometimes there just isn’t one that answers the need. That’s why, in this issue of IG Living, we provide a guide to starting a support group for those who may not have found one for any variety of reasons — perhaps one doesn’t exist or those that do just don’t provide the desired resources. “A Guide to Starting a Patient Support Group” is written by our patient advocate, Abbie Cornett, who in years past provided leadership to a national non-profit organization whose mission was to provide a unified, influential voice for patient organizations, healthcare providers and corporate leaders on matters related to diseases and disorders that depend on biologics and plasma-derived therapies such as immune globulin (IG). With her expertise, she explains why support groups are worthwhile, the differences between regional and online groups, the founder’s role and specific tips for how to get the word out about the group and how to host the first meeting.

In many ways, IG Living magazine and its blog and Facebook page serve as a support group for patients treated with IG. Our goals are to provide educational content, foster communication among patients, caregivers and providers, and advocate for patients’ rights. We hope that within the pages of IG Living you will learn things that will help you deal with your diseases and their treatments.

Perhaps one of the most widely sought-out subjects by our readers concerns the adverse effects of IG therapy. In his article “Adverse Effects of Immune Globulin Therapy,” immunologist E Richard Stiehm, MD, illustrates some of the more common adverse effects in a series of seven vignettes of actual patients. In each, he describes the patients’ symptoms and diagnoses, and then provides commentary about why adverse events occurred and how they can be mitigated.

IG therapy treats many different types of immunodeficiencies, one of which is known as complement deficiency. Dr. Bob Geng’s article “Defects of the Complement System” delves into these types of deficiencies that often predispose patients to autoimmune diseases, most notably lupus, as well as what causes them and how they are treated.

I hope you gain insight from the information presented and enjoy the many other articles in this edition of IG Living.

Ronale Tucker Rhodes, MS
Leslie» For IVIG, Medicare does not limit coverage to a particular brand. Coverage limits depend on the site of administration. In a physician office or hospital outpatient setting, a wide variety of diagnoses are covered. Each Medicare region sets its coverage criteria for IVIG administration, which is published on the Medicare website as a local coverage determination (LCD). In the home setting, coverage of IVIG is limited to five diagnosis codes and, currently, coverage includes the drug only; no supplies, pump or nursing coverage for administration is available (unless a patient is homebound, and nursing may be covered under Medicare Part A). The five covered diagnosis codes are 279.04 (congenital hypogammaglobulinemia), 279.05 (immunodeficiency with hyper IgM), 279.06 (common variable immunodeficiency), 279.12 (Wiskott-Aldrich syndrome) and 279.2 (combined immunity deficiency). Recently, Congress passed a bill that allows for a small demonstration project (4,000 patients) to assess how IVIG for the five current covered diagnosis codes might be extended to include coverage for nursing and supplies. The demonstration project began October 1, and details about the bill can be found on page 10 of the October-November issue of IG Living.

For SCIG, coverage is also limited to the five diagnosis codes referenced above. In addition, IG is secondary to coverage of the durable medical equipment. The only pump currently covered by Medicare to administer SCIG is the Freedom 60 pump (manufactured by RMS Medical Products). SCIG brands covered by Medicare when administered with the Freedom 60 pump include Hizentra, Gammagard Liquid, Gamunex-C and Gammaked. As with IVIG, each Medicare region can determine coverage criteria (LCD), so it may vary from region to region. SCIG has recently been subject to Medicare’s Medically Unlikely Edits (MUE), which places some limits on the total grams a patient may receive in a one-month time frame.

Leslie» The home infusion pharmacy you are currently using is most likely transferring the vials of IG into a bag in their clean room using aseptic technique. This is acceptable, but not really common practice these days. Typically, this is done for nursing convenience and to reduce shipping cost. When the IG is transferred to an IV bag in a clean room using aseptic technique, the clock starts ticking on stability. Most of the manufacturers have done some testing that shows the product is stable in a flexible bag for seven to 14 days. If, at the end of that window, the IG has not been infused, it should be disposed of. If the IG is transferred into an IV bag in your home, the infusion should start within one hour of transfer and should be completed within 24 hours. If the infusion has to be stopped for any reason (except for 30 minutes or so to allow for side effect resolution), the IG should be disposed of. IG should not be mixed into an IV bag at your home and stored in a refrigerator for any length of time, since the transfer did not occur in a sterile environment.

You certainly have the option to request a return to vials so you can inspect them and remove the lot number labels. You also can ask the pharmacy to outline how they transfer the product so you feel comfortable it is following all of the appropriate guidelines of USP 797 (the document that outlines acceptable standards of practice for compounding from sterile solutions). In addition, the pharmacy should be able to provide the labels to you if you decide to allow it to continue transferring product within its clean room.

Question » Home Infusions

The company that sends a nurse to perform my home infusions used to bring the bottles of immune globulin (IG) and transfer them to the IV bag in my home. That allowed me to inspect the bottles before they were opened. Now, my current provider brings the IG to my home already in an IV bag, so I don’t have a chance to inspect the bottles or read the bottle labels. With the recent revelations about compounding pharmacies, I was wondering if IG is ever reconstituted?

Have a question? Email us at editor@IGLiving.com. Your information will remain confidential unless permission is given.

LESLIE J. VAUGHAN, RPh, is senior vice president of clinical services at NuFACTOR Specialty Pharmacy.
How an Antibody Deficiency Diagnosis Is Made: Case 6, Part 5: A 2-Year-Old Boy with Chronic Respiratory Symptoms

By Terry O. Harville, MD, PhD

WE CONTINUE with the discussion of a 2-year-old boy with chronic respiratory infections whose family members had been similarly ill during early childhood, but had outgrown the problems later in childhood. An immune evaluation revealed this child had a functional deficiency in the ability to make antibodies to the pneumococcal polysaccharide vaccine, even with the presence of normal serum levels of IgG, IgA, IgM and IgE.

Several questions were posed to assist in determining the most correct therapy:

1) What role, if any, is there for the mold allergies? Allergy testing had revealed the possibility of mold allergies. Certainly, mold allergies can result in respiratory symptoms and, possibly, sinusitis in some persons. Further, mold allergens could be responsible for asthma symptoms in some patients. But, testing for mold allergies is not without controversy, especially in younger children. Mold allergens can be irritating, so this must be considered in interpreting the results. Since modern antihistamines are safe and effective, and asthma therapies are considered as safe and effective, adding these to the treatment regimen could be beneficial. Indeed, if this is contributing to the symptoms, initiation of immune globulin replacement therapy by itself may not be as beneficial as would have been hoped for.

2) Since other family members had similar histories, but outgrew the tendency for having infections, will this be the same for him? (Could the other family members have had similar inability to respond appropriately to pneumococcal vaccine at an earlier age, but were never tested?) Several issues are potentially contributing. One of the dogmas of immune system development, which is not totally true, is that young children do not have much of an ability to respond to pneumococcal polysaccharide antigens before 2 years of age. Therefore, there has been a long-held belief that a child younger than or about 2 years of age may perform poorly in the pre-/post-immunization assay. Many studies have now shown this not to be the case, but the dogma persists. Further, as with any biologic process, variability exists. Some children mature physically and mentally well before others. In general, the great equalizer of all this is puberty. After completion of the pubertal changes, the biologic processes come closer in alignment. Certainly, the genes inherited within a family greatly contribute to the rate of immune system development. Therefore, not all 2-year-old children will have the same ability to respond to the vaccine challenge. It has been a common experience of many immunologists to have evaluated children with this type of history early in childhood, and upon re-evaluation after puberty, the children were able to respond normally. In others, though, the normal response does not occur, and in some, the total IgG, IgA and IgM serum levels decline over time producing both quantitative and functional deficiencies, thus indicating a likely diagnosis of common variable immunodeficiency.

However, what about this child? Normal serum immunoglobulin levels and family members outgrowing illness about the time of puberty make the odds favorable for him to outgrow the problems, with normalization of functional antibody responses. But, we don’t have a crystal ball to know if this will be true. Therefore, we cannot fully predict the ultimate outcome for this child. We can describe the possibilities as discussed above so that the family can understand as best as possible what may occur. And, there needs to be treatment to get the current clinical situation improved.

We will continue with the dialogue of these questions and concerns, as well as with treatment options, in the next issue.

TERRY O. HARVILLE, MD, PhD, is medical director of the Special Immunology Laboratory at the University of Arkansas for Medical Sciences and a consultant for immunodeficiencies, autoimmunities and transplantation.

Disclaimer: This case report is intended as an illustration for education purposes only. It does not necessarily represent an individual or precise information from patient files.
A new documentary titled “Invisible: The Film” is currently being developed by Megan Densmore who was diagnosed as a teenager with fibromyalgia and, with her symptoms under control, became a professional Kettlebell athlete and fitness coach, something that was unimaginable to her and her doctors during the early stages of her disease. Megan is looking to challenge the way society and Western medicine view chronic pain and invisible illness by featuring patients’ stories. The film seeks to open up the conversation about illness and pain — topics that are often uncomfortable and shied away from — and show what the day-to-day life experiences are for those facing these conditions.

The film is being directed by Tony Awards winner Nick Demos whose mother was diagnosed with fibromyalgia. Others directly associated with the documentary’s creation have been inspired by Megan’s story and have been directly affected in some way by chronic pain or invisible illness — whether firsthand or watching a loved one’s experiences. The production team is currently interested in hearing from those whose lives have been affected by invisible and chronic conditions to share their stories and potentially be included in the film. Those who wish to share their story are asked to email invisiblefilmteam@gmail.com. The film’s progress can be followed at www.invisible-film.com.

Story submitted by Sami Jankins

Documentary to Tell Patient Stories to Help Reduce Stigma

Research

Changes to Gene Therapy Are Safer for Kids with SCID

Alterations in the delivery method of working genes to children with severe combined immunodeficiency (SCID) could make gene therapy for the disease even safer with a small risk of patients developing complications, according to researchers at Great Ormond Street Hospital (GOSH) and its partner the UCL Institute of Child Health. Gene therapy relies on vectors to deliver the working gene into the body and integrate it into the patient’s DNA. These vectors are modified so the harmful aspects of the virus are removed, but the vectors can sometimes cause problems and activate genes within the body in the wrong way, occasionally leading to leukemia. The researchers tweaked the design of the most commonly used vector to try to remove the risk. After trialing the altered vector during gene therapy in nine boys with SCID, they found that it worked as efficiently as previous vectors in terms of correcting immune problems, and there have been no signs of side effects, including the development of leukemia, in the three years since the therapy. “While the long-term effect on the development of cancer across the lifetime in these patients remains unknown, the changes that we have made to this vector appear hugely promising and suggest that we can now confidently address a much wider range of tractable disease targets through gene therapy,” said Adrian Thrasher, professor of pediatric immunology at GOSH who led the research.

Baxter Launches Co-Pay Card Program for Gammagard Liquid Subcutaneous

Baxter International Inc. has launched the Gammagard Liquid (Immune Globulin Infusion [Human]) 10% SubQ CoPay Card, a deductible/co-payment/co-insurance savings offer for primary immunodeficiency (PI) patients in the U.S. who are treated with Gammagard Liquid administered subcutaneously. With the card, PI patients can save up to $2,500 over a period of 12 months to help cover their medication costs. To be eligible, PI patients must be starting or receiving treatment with Gammagard Liquid Subcutaneous for PI, and they must have commercial insurance that covers medication costs for Gammagard Liquid treatment and allows for co-pay/coupon assistance.
Research

Clinical Trial to Be Conducted for CVID and Lung Disease

The Medical College of Wisconsin (MCW) and the Children’s Hospital of Wisconsin Research Institute have received a one-year $280,000 grant from the National Institutes of Health’s National Institute of Allergy and Infectious Diseases to design a multi-center clinical trial for common variable immunodeficiency (CVID) patients with granulomatous/lymphocytic interstitial lung disease (GLILD). Designing the trial will include recruiting a sufficient number of investigators and centers, developing a leadership structure, establishing clinical and scientific cores, creating regulatory documents and manuals of procedures, and developing a database for data collection. The primary investigator on the project is John Routes, MD, professor and chief of asthma, allergy and immunology at MCW and medical director of asthma, allergy and clinical immunology at Children’s Hospital of Wisconsin.

Therapy

Center Opens for Gene Therapy Research

The world’s first center that will research personalized gene therapies for immune disorders has opened at the Australian National University in Canberra. Researchers at the Centre for Personalised Immunology will focus on both immune deficiencies and autoimmune disorders for which they have already found some successful treatments for individual patients. According to Carola Vinuesa, co-director of the center, the field of personalized immunology will revolutionize the way immune disorders are treated. “Up to very recently, diseases like autoimmune diseases … lupus, rheumatoid arthritis, multiple sclerosis, were all treated as if they were a single disease,” Vinuesa said. “The only treatments available, therefore, were treatments that basically dampened the entire immune system. By knowing precisely what is the mechanism of disease in each patient, we can start to tailor treatments specific for each patient. And, we find that each patient, even though they might be diagnosed with the same disease, might need a completely different drug.”

Education

New Comic Book Explains PI to Kids

Medikidz Explain Primary Immunodeficiency is a child-friendly exploration of primary immunodeficiency disease (PI) based on the real-life experiences, concerns and questions of 11-year-old Tom Croall. The new comic book, written by pediatric communication specialist doctors, peer-reviewed by leading experts in the field and published by Medikidz (a medical education company for children) and Bio Products Laboratory, is a superhero story to help demystify PI in an engaging and non-frightening way. At the start of the book, Tom is looking forward to attending a comic book convention, but a cold, made worse by his PI, requires him to stay home. Sensing Tom’s frustration and confusion, the Medikidz superheroes (each an expert on a specific area of the body) whisk him away to Mediland, a planet shaped like the human body. There, they take Tom on a journey through the bloodstream, where he learns more about the causes of PI and the effects on the body. The Medikidz help Tom understand normal components of the immune system, how these might be different in PI and explain treatment options, including the importance of compliance and taking preventive measures to stay healthy. To purchase the book, go to shop.medikidz.com and search for the title.
IN THE NEWS

Reference

Classification of PIs Updated by IUIS

In April, the International Union of Immunological Societies (IUIS) Expert Committee on Primary Immunodeficiency published an updated classification of human primary immunodeficiencies (PIs), the most current and complete catalog of known PIs. The report serves as a reference for these conditions and provides a framework to help in the diagnostic approach to patients suspected of having a PI.

As in previous reports, the conditions have been classified into major groups of PIs, which are now represented in nine tables versus eight in the previous edition. The ninth classification, which lists phenocopies of PIs, was added based on the committee’s understanding and study of conditions that present as inherited immunodeficiencies, but that are not due to germline mutations and instead arise from acquired mechanisms. (The committee predicts that increasing numbers of PI phenocopies will be identified in the future, making this table much longer.) In each table, the condition is listed along with its genetic defect, if known, and the major immunological and, in some conditions, the non-immunological abnormalities associated with the disease.

Because classifications can’t be strictly adhered to, certain conditions fall into more than one category and, therefore, appear in more than one table. Also, because the complexities of these conditions in terms of clinical and immunological presentation and heterogeneity can’t be easily captured in the limited space of a table format, the furthest left column contains the Online Mendelian Inheritance in Man (OMIM) reference for each condition for greater detail and updated information. The report can be viewed at primaryimmune.org/wp-content/uploads/2014/05/IUIS-Classification-April-2014.pdf.

Research

Patient Self-Assessment Leads to Safer Outpatient IVIG Infusions

Healthcare professionals at Geisinger Medical Center in Danville, Pa., have found that patient self-reporting of symptoms during intravenous immune globulin (IVIG) infusion leads to safer care for patients in an outpatient setting. Currently, typical infusion policies at outpatient hematology or oncology clinic settings require that vital signs be taken frequently throughout an infusion. Each four-hour IVIG infusion requires eight to nine monitoring and recording sets of vital signs, and each six-hour infusion requires 10 to 11 sets, which translates into $8,000 per year based on an average nurse wage of $28.50 per hour. Gail Bower, RN, OCN, and colleagues at Geisinger examined the policy efficiency by reviewing the existing data and literature and then collecting prospective data from seven nurses and 33 patients over a three-month period on their perceptions of the practice of taking frequent vital signs during IVIG infusions. The policy and its impact was then reviewed with the hematology/oncology and pharmacology staffs to ensure a unified opinion on the need to revise the policy, as well as to ensure that a change would not impede patient care.

Patients reported perceiving their care to be safe, and the frequent monitoring of their vital signs did not bother them. However, the nurses unanimously reported the current policy as inefficient. Less than 1 percent of patients experience severe reactions, and the potential for adverse events is greatest during the first 30 minutes of the initial infusion, but rarely occur with currently used products. Retrospective data identified three IVIG infusion reactions in 176 infusion encounters, and in all three cases, the symptoms were self-reported, rather than identified through vital signs, and the infusions were safely completed after symptom relief. Therefore, Bower and colleagues concluded that frequent monitoring of vital signs did not result in earlier recognition of adverse reactions to IVIG, and patient self-reporting was safe. However, they did identify circumstances in which frequent monitoring of vital signs is warranted. These include when patients are IVIG-naïve and when there is a change in the brand of medication being used, as well as the patient’s condition, acuity and the physician’s preference.
Introducing
HyQvia
[Immune Globulin Infusion 10% (Human) with Recombinant Human Hyaluronidase]

For adults with primary immunodeficiency

What is HYQVIA?
HYQVIA [Immune Globulin Infusion 10% (Human) with Recombinant Human Hyaluronidase] is a liquid medicine containing immune globulin and recombinant human hyaluronidase indicated for the treatment of Primary Immunodeficiency (PI) in adults. This includes, but is not limited to, common variable immunodeficiency (CVID), X-linked agammaglobulinemia, congenital agammaglobulinemia, Wiskott-Aldrich syndrome, and severe combined immunodeficiencies.

Limitation of Use:
Safety and efficacy of chronic use of recombinant human hyaluronidase in HYQVIA have not been established in conditions other than PI.

HYQVIA is infused under the skin into the fatty subcutaneous (subQ) tissue, in 1 infusion site, up to once every 4 weeks. A second infusion site may be used if needed.

For more information about HYQVIA, talk to your doctor or visit www.HYQVIA.com

Detailed Important Risk Information
HYQVIA can cause serious side effects. Call your healthcare professional or go to your emergency department right away if you get:

- Hives, swelling in the mouth or throat, itching, trouble breathing, wheezing, fainting or dizziness. These could be signs of a serious allergic reaction.
- Bad headache with nausea, vomiting, stuffy nose, fever, and sensitivity to light. These could be signs of swelling in your brain.
- Reduced urination, sudden weight gain, or swelling in your legs. These could be signs of a kidney problem.
- Pain, swelling, warmth, redness, or a lump in your legs or arms, other than at the infusion site(s). These could be signs of a blood clot.
- Brown or red urine, fast heart rate, yellow skin or eyes. These could be signs of a liver or blood problem.
- Chest pain or trouble breathing, blue lips or extremities. These could be signs of a lung problem.

These are not all the possible side effects with HYQVIA. Talk to your healthcare professional about any side effects that bother you or that don’t go away.

What is the most important information that I should know about HYQVIA?

- HYQVIA can cause blood clots.
- Call your healthcare professional if you have pain, swelling, warmth, redness, or a lump in your legs or arms, other than at the infusion site(s), unexplained shortness of breath, chest pain or discomfort that worsens on deep breathing, unexplained rapid pulse, numbness or weakness on one side of the body.
- Your healthcare professional may perform blood tests regularly to check your IgG level.
- With your consent, your healthcare professional may provide blood samples to Baxter Healthcare Corporation to test for antibodies that may form against the hyaluronidase part of HYQVIA.
- Do not infuse HYQVIA into or around an infected or red swollen area because it can cause infection to spread.
- Talk to your healthcare professional if you become pregnant. Women who become pregnant during HYQVIA treatment are encouraged to enroll in the HYQVIA Pregnancy Registry by calling Medical Information at 1-866-424-6724.

What are the possible or reasonably likely side effects of HYQVIA?

After HYQVIA infusion a temporary, soft swelling may occur around the infusion site, which may last 1 to 3 days, due to the volume of fluid infused. Mild or moderate pain, redness, swelling or itching may occur at the site of infusion and generally go away in a few hours. Local reactions are less likely after the first few infusions. The most common side effects of HYQVIA are headache, fatigue, nausea, fever, and vomiting. Antibodies to the hyaluronidase component of HYQVIA were formed in some patients taking HYQVIA. It is not known if there is any long term effect. In theory, these antibodies could react with your body’s own PH20. PH20 is present in the male reproductive tract. So far, these antibodies have not been associated with increased or new side effects.

What is HYQVIA?
HYQVIA is a liquid medicine containing immune globulin and recombinant human hyaluronidase. HYQVIA contains IgG antibodies, collected from human plasma donated by healthy people. The antibodies help your body to fight off bacterial and viral infections. The hyaluronidase part of HYQVIA helps the immune globulin get absorbed into the body to fight infection.

Before starting HYQVIA, tell your healthcare professional if you have had or had any kidney, liver, or heart problems, a history of blood clots, because HYQVIA can make these problems worse. Also tell your doctor if you have IgA deficiency or a history of severe allergic reactions to immune globulin (IgG) or other blood products, or are pregnant, trying to become pregnant or are breast feeding.

How should I take HYQVIA?
HYQVIA is infused under the skin (subcutaneously) up to once every 4 weeks. You can get HYQVIA at your healthcare professional’s office, clinic, or hospital. You can use HYQVIA at home. You and your healthcare professional will decide if home self-infusion is right for you. Do not use HYQVIA at home until you get instructions and training from your healthcare professional.

Who should not take HYQVIA?
Do not take HYQVIA if you are allergic to IgG, hyaluronidase, or other blood products, or have IgA deficiency with antibodies to IgA.

To report suspected side effects, contact Baxter Healthcare Corporation at 1-866-888-2472 or FDA at 1-800-FDA-1088 or www.fda.gov/medwatch.
Brief Summary of Prescribing Information
HYQVIA [Immune Globulin Infusion 10% (Human) with Recombinant Human Hyaluronidase]

The following summarizes important information about HYQVIA (pronounced Hi-Q-via). Please read it carefully before using this medicine. This information does not take the place of talking with your healthcare professional. If you have any questions after reading this, ask your healthcare professional.

What is the most important information that I should know about HYQVIA?

- HYQVIA can cause blood clots.
- Call your healthcare professional if you have pain, swelling, warmth, redness, or a lump in your legs or arms, other than at the infusion site(s), unexplained shortness of breath, chest pain or discomfort that worsens on deep breathing, unexplained rapid pulse, numbness or weakness on one side of the body.
- Your healthcare professional may perform blood tests regularly to check your IgG level.
- With your consent, your healthcare professional may provide blood samples to Baxter Healthcare Corporation to test for antibodies that may form against the hyaluronidase part of HYQVIA.
- Do not infuse HYQVIA into or around an infected or red swollen area because it can cause infection to spread.
- Talk to your healthcare professional if you become pregnant. Women who become pregnant during HYQVIA treatment are encouraged to enroll in the HYQVIA Pregnancy Registry by calling Medical Information at 1-866-424-6724.

What should I tell my healthcare professional before I start using HYQVIA?

Before starting HYQVIA, tell your healthcare professional if you:

- Have or had any kidney, liver, or heart problems or history of blood clots because HYQVIA can make these problems worse.
- Have IgA deficiency or a history of severe allergic reactions to IgG or other blood products
- Are pregnant, trying to become pregnant or are breast feeding.

What is HYQVIA?

HYQVIA is a liquid medicine containing immune globulin and recombinant human hyaluronidase. HYQVIA contains IgG antibodies, collected from human plasma donated by healthy people. The antibodies help your body to fight off bacterial and viral infections. The hyaluronidase part of HYQVIA helps more of the immune globulin get absorbed into the body to fight infection.

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- Do not take HYQVIA if you: Are allergic to IgG, hyaluronidase, or other blood products
- Have IgA deficiency with antibodies to IgA

How should I take HYQVIA?

- HYQVIA is infused under the skin (subcutaneously) up to once every 4 weeks.
- You can get HYQVIA at your healthcare professional's office, clinic, or hospital.
- You can use HYQVIA at home. You and your healthcare professional will decide if home self-infusion is right for you.

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The most common side effects of HYQVIA are headache, fatigue, nausea, fever, and vomiting.

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- Hives, swelling in the mouth or throat, itching, trouble breathing, wheezing, fainting or dizziness. These could be signs of a serious allergic reaction.
- Bad headache with nausea, vomiting, stiff neck, fever, and sensitivity to light. These could be signs of swelling in your brain.
- Reduced urination, sudden weight gain, or swelling in your legs. These could be signs of a kidney problem.
- Pain, swelling, warmth, redness, or a lump in your legs or arms, other than at the infusion site(s). These could be signs of a blood clot.
- Brown or red urine, fast heart rate, yellow skin or eyes. These could be signs of a liver or blood problem.
- Chest pain or trouble breathing, blue lips or extremities. These could be signs of a lung problem.

These are not all of the possible side effects for HYQVIA. For more information about HYQVIA, go to www.HYQVIA.com. For more information on patient resources and education, please visit www.immunedisease.com.
Researchers at the University of California (UC) San Diego conducted a trial of 196 children with Kawasaki disease (KD) to assess whether infliximab could reduce intravenous immune globulin (IVIG) treatment resistance. Between 10 percent and 20 percent of patients with KD experience fever relapse following the standard therapy with a single infusion of IVIG and aspirin. It is known that IVIG resistance increases the risk of heart damage, most commonly a ballooning of the coronary arteries called aneurysms. These children require additional therapy to interrupt the inflammatory process that can lead to damage of the coronary arteries.

“While the addition of infliximab to primary treatment in acute KD did not reduce treatment resistance, it was safe and well-tolerated, achieved a greater reduction in the size of the left coronary artery, and reduced the number of days of fever and laboratory markers of inflammation,” said the study’s first author, Adriana H. Tremoulet, MD, of the UC San Diego Department of Pediatrics and the UC San Diego/Rady Children’s Hospital-San Diego Kawasaki Disease Research Center. “We conclude that use of infliximab is safe in infants and children and that early treatment could help children with KD with high levels of inflammation or early signs of coronary artery disease.”

A recent study has discovered a biomarker in chronic inflammatory demyelinating polyneuropathy (CIDP) that explains why some patients don’t respond to intravenous immune globulin (IVIG) therapy. In the study, researchers used immunocytochemical methods to identify antibodies to the paranodal protein neurofascin 155 (NF155) in four of 61 patients with CIDP. All of the patients had disabling (modified Rankin Scale scores of 4), predominantly distal weakness that was refractory to treatment with IVIG. Two of the patients were identified from a local sample of 53 patients with CIDP. The other two patients were from a national pool of eight patients with previously-identified CIDP refractory to IVIG. Disabling tremor and ataxia were present in three of the four patients.

Currently, there are no biomarkers that predict response to therapy reliably. While most CIDP patients improve with IVIG, a small subset remain refractory and need other immunosuppressive treatments. Therefore, identifying the antibodies to components of the peripheral nerve associated with specific phenotypes would be an important aid in optimizing treatment.

The study was published in the March 11 issue of *Neurology*.
Managing Medical Expenses

By Ronale Tucker Rhodes, MS

ANYONE WITH A chronic illness knows all too well the hassles of frequent doctor visits, intermittent hospital stays and the need for multiple medications. Add to these a barrage of paperwork, and managing expenses can seem overwhelming. That’s because what patients ultimately owe depends on a variety of factors. Here are some tips for navigating the medical expense maze.

Tracking Expenses

Since bills come from multiple doctors for visits, tests and treatments, understanding what is owed can be confusing. Keeping track of the status of bills will help if a problem arises. To do this, a detailed log should be kept of every medical appointment or service and any prescription drug purchased. The log should summarize each medical appointment and include any lab work, tests or procedures, and it should include a running log of all medical bills as they are received. Patients can do this themselves with a spreadsheet or they can use one of the many available online tools.

A useful Excel spreadsheet was created by Tim Sharpe, who was frustrated by making sense of bills from medical providers, which he posts on his Tim’s Eclectica website (beasttwo.org/med_trans/index.shtml). According to Tim, his is “a very simple system to manage this information, to track medical visits and procedures, to have some idea of what bills and insurance statements to expect, and to match up medical visits and procedures with bills and insurance statements to keep them honest.” In the spreadsheet, patients can enter data about visits/procedures, insurance statements and bills and payments into color-coded sections. The spreadsheet can be downloaded to be used for personal, non-commercial use without restriction.1

Other tools are also available. One is Quicken Medical Expense Manager, a $50 downloadable program that tracks claims and payments across multiple insurance companies and finds and helps to fix overcharges and billing errors. Another is Smart Medical Consumer, an online portal that offers three different services to help patients manage medical expenses and keep track of all medical billing paperwork, as well as provides billing experts for help with billing issues.

Identifying Billing Errors

Never assume that a medical bill is error-free. According to Medical Billing Advocates of America, a national association that checks bills for consumers, eight out of 10 hospital bills its members scrutinize contain errors. And, while bills from doctors’ offices and labs have fewer mistakes, they do happen.2

Consumer Reports suggests patients review statements when they arrive. Statements will include an explanation of benefits from the insurance company, followed by bills from the healthcare provider. If a bill from a provider’s office is merely an invoice, an itemized bill or statement should be requested. These should then be compared with the list of procedures noted in the patients’ log. If patients don’t understand something on the bill, they should call their provider and ask them to explain what it is.2,3

The eight most common billing errors are duplicate charges, cancelled tests or procedures, incorrect patient information (which can lead to a claim denial), upcoding charges (such as being charged for a more serious condition that requires more costly procedures or the highest level of emergency room services when the lowest level was received†), unbundling of charges (the separation of procedures that should have been billed under the same procedure code), balance billing when in-network (when the provider bills for charges other than co-payments, co-insurance or any other amount than what was assigned by the insurance company), incorrect quantity (such as a quantity of medications) and operating room and anesthesia time (billing for more time than a patient was in the room).3

If a mistake is found, patients should contact the billing department and ask for it to be corrected. There are companies that help patients manage bills and identify billing errors. Some of the less expensive options are Health Proponent (www.healthproponent.com) and Health CPA (www.healthcpa.com).

Reducing Expenses

Other than ensuring their bills are correct, there are a few ways patients can reduce their medical costs.

Deductibles. Regardless of how high an insurance plan’s deductible is, there are services that the insurance company must pay for in full even if the deductible has not yet been met. For instance, all insurance plans (except those that existed before the new healthcare law was enacted in 2010) must pay in full for preventive health services. A list of those services can
be found at www.healthcare.gov/what-are-my-preventive-care-benefits. In addition, some plans may cover services that carry a co-pay from the first day the plan is in effect even if the deductible hasn’t yet been met. The key is to use pre-deductible services for care if possible. Patients should consult their plan’s summary of benefits and coverage to find out.

**Lower-cost providers.** Because insurance companies negotiate prices with providers, going to a low-cost provider can save a lot of money. Only the insurance company will know which providers have the lowest costs, and with some health plans, members can look up prices online.

**Medications.** Patients should ask for generic drug prescriptions from their providers, which often cost as little as $4 each. In addition, several drugs that were once prescription-only can now be purchased over the counter.

**In- vs. out-of-network.** With both HMOs and PPOs, patients should use those providers who are in-network to ensure they don’t get a higher bill. In-network providers have agreed to accept a negotiated health plan price as payment in full, even without meeting the deductible. Patients who go to out-of-network providers are subject to what the provider considers a “reasonable” price for the service. That means patients then pay the difference between what the health plan agrees to pay and what the provider deems reasonable. It’s easy to go out-of-network accidentally, so patients need to ask ahead of time. If going out-of-network on purpose, it’s possible to negotiate a price agreement with a provider based on the “fair” price in a geographical area, which can be found at FairHealthConsumer.org or HealthCareBlueBook.com.

**FSAs.** Patients who are employed should consider a flexible spending account (FSA), which allows them to determine how much money they want to set aside from their paycheck to pay unreimbursed medical expenses for the following year. Up to $2,500 can be put into an FSA, which is not taxable, but it has to be used in full during that year or else unspent funds are lost.4

**Claiming Expenses at Tax Time**

If medical expenses are extremely high, which they often are with chronic illnesses, many of those expenses can qualify as deductible from taxable income on Form 1040, Schedule A. While unreimbursed medical expenses are only deductible when they exceed 10 percent of adjusted gross income (AGI), there is a temporary exemption to the 10 percent rate for individuals age 65 and older and their spouses who can deduct unreimbursed medical expenses that exceed 7.5 percent of AGI from Jan. 1, 2013, through Dec. 31, 2016. Beginning Jan. 1, 2017, all taxpayers can only deduct unreimbursed medical expenses that exceed 10 percent.5

Medical care expenses include prescribed medicines and all out-of-pocket healthcare expenses, including healthcare insurance premiums (however, exclusions apply to employer-sponsored plans) and transportation costs. A complete list of deductible expenses can be found in the IRS Publication 502 at www.irs.gov/publications/p502/index.html.6

An often-overlooked source for significant tax deductions is impairment-related work expenses (IRWE) for individuals who have an impairment that substantially limits one or more of their major life activities such as performing manual tasks, walking, speaking, breathing, learning and working. Disability-related business expenses are 100 percent deductible; if it comes out of pocket and is required to be an employable person, it can be deducted. Some examples of IRWE are the cost of structural or operational modifications to vehicles needed to travel to work; the cost of driver assistance; services performed to help a person prepare for work (dressing, cooking, eating); medical devices such as wheelchairs; modifications to the exterior of the home to permit access to the street; modifications in the home to create a workspace to accommodate an impairment; and work equipment such as an adapted workstation or modified keyboard.7

**Staying Organized**

Keeping a detailed log of medical expenses and screening medical bills to ensure they are correct is essential to staying organized and paying only what is owed. To minimize healthcare costs, patients should take full advantage of deductibles and lower-cost services and medications. In the end, managing expenses can help patients to anticipate how much their medical care will cost in coming years. Those who are unable to keep up with medical expenses for any reason should not hesitate to enlist help.

**RONALE TUCKER RHODES, MS, is the editor of IG Living magazine.**

**References**


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*Hospitals use free ER levels when billing patients who visit emergency rooms. The different levels reflect the varying amount of resources (equipment and supplies) the hospital utilizes. Level 1 represents the lowest level of ER facility fee, while level 5 is the highest. Currently, there are no nationalized standards for how hospitals assign the different ER levels, so documentation should be requested as to how that level was determined.*
A Guide to Starting a
Patient Support Group

While it may take some effort, with a few basic steps, anyone can start a support group to help patients and their families connect and spread the word about rare diseases.

By Abbie Cornett
ONE OF THE MOST DIFFICULT things in life a person or family must face is the diagnosis of a rare or chronic disease. Challenges range from finding the appropriate medical care, to navigating the maze of insurance approvals, denials and appeals, financial hardship and the feelings of isolation that many times accompany a diagnosis. Patients frequently don’t know where to turn, and that is where a support group can help.

Patient support groups are not all the same; they range from very large groups whose mission is very broad such as the National Organization for Rare Disorders (NORD), an umbrella group for more than 7,000 rare diseases, to very small local groups offering support to patients on a one-on-one basis. Regardless of their size, all patient support groups are started with the same goal in mind: to help patients and families cope with the many problems associated with chronic illness. They are formed to empower patients by allowing them to share their experiences and frustrations with other people facing similar challenges. This sharing of common experiences reduces feelings of isolation and frustration that patients and family members often feel by offering them a safe venue to discuss their experiences, hardships and feelings. Support groups further act as a resource where patients can go for information regarding their disease and serve an important role in raising awareness of diseases through advocacy and education. Many groups become very involved in issues of healthcare policy and legislative initiatives to promote change in laws that affect patients.

While there are many patient support groups for chronic diseases, there are several reasons why patients might want to start their own support group. For instance, sometimes, there isn’t a group established to benefit patients in a specific region. Or, the groups already established may not serve the specific needs of some patients. Here are some basic pointers for those whose goal is to start their own support group.

The Founder’s Role

A patient support group can be started by anyone; no special training or experience is necessary. Groups are frequently founded by patients or family members who want to help others by bringing them together in an informal setting where they can discuss the challenges they face, to offer additional sources of information and to promote awareness of the disease. Groups may also be started by healthcare providers and physicians who are concerned about access to information for their patients and families.

Still, starting a support group places demands on you that you may not have considered. Before doing anything, you need to ask yourself a few very important questions. First, do you have the time? Leading a support group requires a level of commitment you may not be prepared for. People in need will be depending on you to be there for them. You cannot cancel a meeting because you are tired, or just decide you don’t want to do it anymore. Second, how will you finance the group? Starting a group can be a financial drain if you try to do it without donations. You must consider the cost of phone calls, flyers, postage, refreshments and the meeting location. Ask for assistance whenever you can. Don’t feel guilty about asking for donations; the money is going for a good cause. When your group is formed, pass the hat at meetings; patients and families will be happy to help when they can.

Before starting a group, do your research to see if there is already an existing group that serves the patient community you are concerned with. If a national group exists, it may be beneficial to affiliate with them. Affiliation with a national organization will give your group credibility and access to resources that might take longer to achieve than if you start from scratch. However, if you decide to affiliate with a national group, it will have guidelines that your group must follow. It may also have a different set of goals. For instance, while its goal may be lobbying, your primary concern may be education and support.

Remember that you are one person, and you can’t do everything on your own. Once you have determined you are committed to starting a group, whether it’s affiliated with a national group or not, you need to pick a co-leader. You will need at least one other person in the beginning you can depend on. The number of people you need to help you will grow as the group grows. Pick people who are good leaders. They must be able to run the group if you are unable to be there.
Defining the Group’s Goals

Now is when the real work begins. What will you name your group? The name should reflect the group and be inviting to potential members.

Next, you need to define the goals of the support group and what will be discussed when you meet. A good way to start is to write a mission statement that should include what you would like to accomplish. For example, NORD’s mission statement reads: “NORD is committed to the identification, treatment, and cure of rare disorders through programs of education, advocacy, research, and service.”

Choosing a Venue

Once you have a mission statement, a co-leader and have identified your audience, it’s time to find a venue. Choosing a venue can mean not only the location of your meeting but what type of group you form. You can choose a traditional group or an online group. If you choose a traditional group, the location of your meetings should make people feel comfortable. While you can hold smaller meetings in a private residence, a better choice is a public place such as a local church, library or hospital. These are good options for many reasons. Not only are they more approachable to new members, they are usually close to public transportation. In addition, they have available parking and are handicap-accessible. If such a venue is unavailable, you may need to look at local hotels or restaurants, which are a good option particularly for larger meetings. The only drawback to these locations is they will charge you for the meeting space.

Next, determine how often the group is going to meet, how long the meetings are going to last and how many people you want to attend. It is better to start small with fewer meetings. You can always increase the frequency of meetings after you are established. And, because people are depending on you, you have to make sure the meetings start on time, end on time and follow the published agenda.

Brick and Mortar vs. Online

With today’s technology, you may want to consider starting an online support group rather than the traditional brick-and-mortar group. This option has the advantages of not requiring a physical meeting space, costing less to form and maintain, and allowing people from anywhere in the world to participate. This means that you can reach a much larger and diverse group of
patients. Online groups also offer anonymity to participants, allowing them to ask questions they might be uncomfortable asking in person.

While an online support group offers many benefits, it also has unique problems that don’t occur in a traditional group. The anonymity afforded by an online group can be a drawback since patients can experience feelings of isolation and loneliness because of their disease that an online group may not be able to address. Many patients want the physical connection that is found in a traditional group. In addition, information is more difficult to manage in an online group. Frequently, an online page has too much or misleading input. As the leader, you will have to closely monitor the group’s page for misinformation and be diligent in deleting inappropriate posts.

If you decide that an online group is your best option, you will need to follow many of the same steps as those for starting a traditional group. However, there are some differences. You must purchase a domain name as soon as possible. Most domain names can be purchased for a nominal amount. Then, you will need to pick a platform that allows you to control the group membership and settings. For instance, you must be able to remove people from the group that post negative or harmful comments.

Getting the Word Out

Whether you choose a traditional group or an online group, publicizing your meetings is very important. People can’t come to the meetings unless they know about them. There are many good ways to get your information out. Today, the world is focused on social media. Go viral with your group. Start a Twitter account, a Facebook account and an online chat group. Tell your story! If you are a patient, a family member or a caregiver, you have some personal reason for starting the patient group. Starting a blog is a great way for people to learn about you. You can be your own best publicist.

Use the media. They can be a great free resource. Many radio stations and newspapers set aside ad space for public service announcements for groups like yours. Write press releases about the formation of your group with the date and location of the first meeting. Directly contact the local newspaper editor to suggest the paper publish a story highlighting the disease and how it affects patients and their families in the community. Design a flyer, and post copies in locations where potential members will likely see them such as in hospitals, doctors’ offices, pharmacies and public information boards. Send your group’s information to the local social service and community agencies, and ask them to include your group in their directories. Be sure to personally invite people you know who would be interested. A personal invitation is still the most effective way to engage people.

Your First Meeting

For your first meeting, preparation is key. Make sure you know what you’re going to say. It must be relevant and interesting to the group, as they will be looking to you for information and support. Also, make sure that the meeting room is comfortable and accessible for all people. Most important, start the meeting on time. Nothing frustrates people more than unpredictability.

Starting a blog is a great way for people to learn about you.

Since this is a new group, make sure everyone understands that they are in a safe environment. To establish trust, explain the rule that what is said in the group, stays in the group. Introduce yourself, and tell them your story; explain why you felt the need to start the group. Many people will be uncomfortable at a first meeting and hesitant about talking. By sharing your story first, you will give people a feeling of security. Then invite the group to introduce themselves and share what they are comfortable with. While people are speaking, be sure to be an active listener and to encourage all to ask questions and share. And thank everyone for their participation!

You’re Connected!

When your first meeting is over, pat yourself on the back and remember that all of the work was worth it. You have put yourself out there to support people in situations similar to your own. With relatively little effort and cost, you’ve established a patient support group to make new connections that provide encouragement, information and a sense of cohesiveness to all participants.

ABBIE CORNETT is the patient advocate for IG Living magazine.

Sources
Adverse Effects of Immune Globulin Therapy

As illustrated by seven patient vignettes, many different common infusion-related adverse effects can occur for a variety of reasons — all of which have treatment options.

By E Richard Stiehm, MD

HUMAN IMMUNE GLOBULIN (IG) is used for replacement therapy in primary and secondary antibody immunodeficiencies for prevention and treatment of certain infections, and as an immunomodulatory agent for autoimmune and inflammatory disorders. IG use is increasing rapidly because of improved diagnosis of immunodeficiency, new indications and expanding use in less-developed countries.

IG is available for use intravenously (IVIG), subcutaneously (SCIG) or intra-muscularly (IGIM). The latter route is mostly given as a single small injection for prevention of certain infectious diseases, often as a special hyperimmune globulin (e.g., hepatitis B IG [HBIG] and tetanus immune globulin [TIG]).
IG therapy is not without risk.\textsuperscript{1,2} Reactions can be local or systemic, immediate or delayed, and late or potential (Table 1). Local reactions at the infusion sites are particularly common with slow subcutaneous infusions. Local pain and swelling, while rarely serious, occur in up to 75 percent of all SCIG infusions, balanced by the rarity of systemic reactions (1 percent to 3 percent). By contrast, local reactions with IVIG infusions are very rare (e.g., persistent pain, bruising or swelling due to fluid extravasation), but systemic reactions are very common, occurring in 20 percent to 50 percent of patients at least once, and 5 percent to 15 percent of all infusions.

Product factors causing systemic reactions vary considerably among different manufacturers and even among lots of the same brand. These include specific antibodies to cells or tissues, trace quantities of other IGs (e.g., IgA), high molecular weight IG complexes, other serum proteins, microbial antigens, cytokines, factors that activate the patient’s own immune system, and procoagulation factors not removed by fractionation (Table 2).

Infusion-related adverse risks include dose, rate, route, premedication, etc. Patient factors include age, past reactions, acute or chronic illness, etc. Patient factors that predispose to thromboembolism are indicated by an asterisk (Table 3).

IG is administered in hospitals, clinics, doctors’ offices, infusion centers and at home by health agencies or family members. Because of the risk of side effects, healthcare providers or responsible adults must be able to recognize and treat such reactions and have access to an emergency center that can deal with the occasional serious reactions described below.

Several of the more common adverse reactions are illustrated in the following vignettes.

**Patient 1:**

**A 16-Year-Old Boy with X-Linked Agammaglobulinemia**

Jonathan, age 16, has X-linked agammaglobulinemia and has received monthly IVIG at a New York infusion center for the last five years without problems. He takes Tylenol and Benadryl before each infusion. Before attending a 10-week summer camp in New Mexico, the camp made arrangements for his IVIG to be given at a nearby small hospital. He was happy to receive his first infusion there, as he had developed a respiratory infection with a low-grade fever, and the IVIG infusions often help him recover quickly.

The infusion center gave him the same IVIG dose at the same rate as in New York, but the IVIG brand was different. Further, the camp nurse forgot to give him his premedication. Halfway through the infusion, he developed chills, a temperature of 102 degrees, back pain, nausea and malaise. The infusion was temporarily interrupted, Benadryl and Tylenol were given, and the infusion resumed after 45 minutes. He felt achy and feverish for the next 12 hours, relieved by naproxen and additional Benadryl.

**Diagnosis:** Mild constitutional reaction to IVIG associated with concurrent infection

**Comment:** Three factors may have contributed to these adverse effects. He had a respiratory infection, he switched brands, and he did not take his premedication (Table 3). Other immediate reactions may include headache, hypotension, urticarial rash or palpitations. These are usually transient and are treated as above with slowing or stopping the infusion, giving antihistamines and nonsteroidals. Intravenous steroids are necessary in some instances.
Dr. Jones told Susan’s parents that the reason their daughter developed sinus problems, bronchitis and, now, pneumonia was that she had hypogammaglobulinemia and poor antibody responses to childhood vaccines and a recent Pneumovax vaccine. But, he told them she would feel better once she started on regular doses of IVIG. The first IVIG dose of 500mg/kg was given with premedication, and except for a slight headache, the infusion was well-tolerated.

That night, two hours after she went to bed, she awoke with a splitting headache, stiff neck and mild nausea. At the emergency room, her temperature was 100 degrees Fahrenheit, and her stiff neck was present but improved. Her white blood count was 12,550 cells/ul. The resident suggested a spinal tap, but the attending physician diagnosed aseptic meningitis secondary to the IVIG infusion; he gave her Vicodin and sent her home with directions to return if she developed a worsening fever or headache.

**Diagnosis:** Aseptic meningitis due to IVIG

**Comment:** Aseptic meningitis is a not an uncommon complication of IVIG, usually occurring 6 hours to 12 hours after a high-dose IG infusion.³ Spinal fluid shows both lymphocytes and granulocytes; cultures are sterile. Patients with a history of migraine are more susceptible to this complication. Symptoms usually subside in 48 hours. Recurrences are common and can be minimized by steroid premedication, smaller and divided IVIG doses and slower rates of infusion.

William, a 55-year-old carpenter, was receiving chemotherapy for chronic lymphocytic leukemia for the last several years. After several bouts of sinusitis and a second case of pneumonia, his immune system was evaluated. Despite normal IG levels, he had no antibodies to 22 of the 23 pneumococcal serotypes following a pneumococcal polysaccharide vaccine (Pneumovax). An antibody deficiency was diagnosed, and he was started on IVIG. Ten minutes after the start of his first IVIG infusion, he developed tightening of his chest, wheezing and an urticarial rash. His heart rate increased to 120 beats per minute, and his blood pressure fell to 100/60. The infusion was stopped, adrenalin was given and intravenous Solu-Cortef was started. After one hour, he was improved and was able to go home with instructions to continue Benadryl and oral steroids. Blood drawn before the infusion showed that he had an IgG antibody to IgA and selective IgA deficiency.

**Diagnosis:** Anaphylaxis to IVIG associated with an IgG anti-IgA antibody

**Comment:** Anaphylaxis with IVIG is a very rare complication, but it is why IVIG should be administered at a facility with trained personnel. Anaphylaxis is sometimes associated with an antibody to IgA acquired during a prior exposure to IG.¹ Patients with selective IgA antibody are more likely to have such antibodies; these are usually IgG antibodies rather that IgE antibodies. Most individuals with these antibodies, including those with selective IgA deficiency, do not develop anaphylaxis. Thus, testing for IgA deficiency or IgA antibodies is not recommended prior to an IVIG infusion. Patients experiencing such a reaction should wear a medic alert badge, use an IVIG product low in IgA or receive SCIG.
Jamel has common variable immunodeficiency and has recently been diagnosed with Crohn’s disease. When his IgG levels decreased from 600 mg/dl to 380 mg/dl, his IG dose was increased from 400 mg/kg per month to 600 mg/kg per month. A blood test conducted three days after the higher dose revealed that his hemoglobin had fallen from 12.5 grams to 9.8 grams. A direct Coombs’ test was positive, and the indirect bilirubin (a brownish yellow substance found in bile) and the reticulocyte (immature red blood cells) count were slightly elevated. His blood group was A positive.

**Diagnosis:** Coombs’ positive hemolytic anemia associated with IVIG administration

**Comment:** All IGs have low titers of antibodies to red cells usually directed against blood types A and B. These antibodies, termed isoagglutinins, coat A, B or AB red cells present in all individuals except those who have blood type O. The coated cells are phagocytized in the spleen and destroyed (hemolyzed), resulting in a mild, usually asymptomatic anemia. If the administered IG has a high titer of isoagglutinins or is given in large amounts, the hemolysis may result in significant anemia, with a fall of hemoglobin of up to 5 gm/dl. Contributing factors to this complication include non-type O blood group, female sex, splenomegaly or an underlying inflammatory disease. The latter was present in the above patient, resulting in enhanced reticuloendothelial activity of the spleen.

Evelyn, age 10, has a long history of low-grade diarrhea, mild abdominal pain and slow growth — symptoms that were ignored by her doctor-averse rural parents. When seen in an ER for cough and fever that was diagnosed as pneumonia, symmetrical pitting edema of the legs was noted. Blood tests revealed lymphopenia (700 cells/ul), low albumin (2.5 g/dl) and hypogammaglobulinemia (IgG 215 mg/dl). Intestinal biopsy disclosed intestinal lymphangiectasia. Protein loss through the stool was confirmed by the presence of alpha-1 antitrypsin in the stool.

IVIG was given for the hypogammaglobulinemia. Yet, despite high doses, a therapeutic IgG level could not be achieved. She was switched to weekly 20% SCIG infusions using three abdominal wall sites, which corrected the hypogammaglobulinemia. However, she developed pain, redness and swelling at the infusion sites for several days after the infusion. The IG dose at each infusion site was decreased by using five sites and giving the half doses biweekly.

**Diagnosis:** Local pain and swelling with SCIG

**Comment:** Local reactions of persistent pain, redness and swelling to subcutaneous IG are common and usually subside within 24 hours. The same site can be used repeatedly, and often, over time, these doses are better tolerated (site-related tolerance). Many patients find that the 10% SCIG is better tolerated than the 20% formulation. Some patients prefer smaller doses given daily without the need of an infusion pump. Conversely, some patients tolerate larger infusions given every two weeks. (Recently, the U.S. Food and Drug Administration approved a 10% solution with human hyaluronidase with a dosing regimen requiring only one infusion up to once per month [every three to four weeks] and one injection site per infusion that promotes rapid absorption from the infusion site.)
Patient 6:
A 58-Year-Old Man with Myasthenia Gravis and Leg Pain

Tom has had myasthenia gravis for 10 years, and despite neostigmine, prednisone and azathioprine, muscle strength was decreasing. He was started on IVIG 1 g/kg monthly, which improved his muscle strength. Three days after an uneventful infusion, he took an airplane flight from Los Angeles to Boston. One day after arrival, he developed pain and swelling in his right calf. An ER physician diagnosed a deep vein thrombosis and treated him with anticoagulants.

**Diagnosis:** Venous thrombosis after IVIG and air travel

**Comment:** Thrombotic complications of IVIG can be mild as in the above or very serious, including heart attack, stroke, pulmonary embolism and veno-occlusive disease in transplant patients. Most (70 percent) are arterial thrombosis occurring hours or days after infusion, or venous thrombosis (30 percent), which may be delayed for several weeks after the infusion. Risk factors are multiple, including both patient factors and product factors (Table 2). Certain IG lots were withdrawn from the market because of residual procoagulant activity following fractionation. The U.S. Food and Drug Administration has added a black box warning to IG because of this risk. Most such events occur in adults receiving high-dose IVIG, but children and patients receiving SCIG have also been affected. Preventive measures are listed in Table 4.

Patient 7:
A 60-Year-Old Man with Hepatitis C Undergoing Liver Transplant

James received a liver transplant one week ago for liver failure due to hepatitis C. Since both he and the donor were cytomegalovirus (CMV) seropositive, he has received postoperative IVIG every other day to prevent CMV reactivation. Two weeks post-transplant, he developed decreased urinary output, mild proteinuria and an increase of his BUN (blood urea nitrogen) and creatinine levels. IVIG was discontinued, fluids were restricted and drugs excreted in the kidney were stopped. The renal failure corrected after one week.

**Diagnosis:** Impression renal failure associated with IVIG

**Comment:** This patient recovered spontaneously, but other patients have required dialysis. A black box warning of the risk of renal failure with IVIG has been added to the package inserts. Risk factors include large doses, prior renal disease and sucrose- or maltose-containing products. Most of the latter products have been removed from the market.

**Summary**

The above vignettes highlight the more common major side effects of IG therapy that have occurred in multiple patients. Less common reactions are listed in Table 1. In addition to these sporadic complications, IG therapy will obscure the diagnosis of antibody immunodeficiency, negate the value of serologic tests for current or past infectious diseases, and inhibit the antibody response to many vaccines.

Most adverse reactions to IG are minor, but severe reactions can occur. Thus, careful attention should be given to the choice and route of product, the patient’s past response to infusions and past or present illness, and the availability of persons that can recognize and manage adverse events.
E RICHARD STIEHM, MD, is professor of pediatrics at the David Geffen School of Medicine at the University of California, Los Angeles.

References
Defects of the Complement System

Missing or reduced elements of the complement system, a complex and essential part of the innate immune system, cause recurrent bacterial infections and predispose individuals to autoimmune disorders.

By Bob Geng, MD
THE COMPLEMENT SYSTEM is an essential part of our body’s defense against infections. It helps the cells in our immune system to better recognize and capture bacteria, and can also lead to direct elimination of bacteria by destroying its cell membrane. There are many components to the complement system, and three distinct pathways in which it can be activated. In addition to its components, many regulatory proteins are involved in ensuring the normal functioning of the complement system.

Complement proteins are made in the liver and circulate in the bloodstream. They can be activated spontaneously (alternative pathway), by the molecules on the surfaces of pathogens directly (lectin pathway) or by the antibodies generated against specific pathogens (classical pathway). The nine main proteins involved in the classical pathway of activation are C1, C2, C3, C4, C5, C6, C7, C8 and C9. In the alternative pathway, factor B, factor D and properdin are involved in addition to components C3 and C5 through C9. In the lectin pathway, mannose-binding lectin (MBL) and mannann-binding lectin-associated protease 2 (MASP-2) are involved in addition to components C2 through C9.

Defects of the complement system are rare, but they can occur at crucial steps in each of the pathways of activation, as well as among the regulatory proteins. These deficiencies in complement components can be either inherited or acquired. This article will focus mainly on the inherited disorders, the way they may present, the method of diagnosis and treatment strategies, but it will also briefly touch on the essential aspects of acquired complement deficiencies.

Inherited Disorders

Inherited disorders are deficient in components of the complement system. The clinical features of inherited disorders generally present as recurrent infections and/or autoimmune disorders. Infections include respiratory tract illnesses (sinusitis, bronchitis, pneumonia), meningitis and, in severe cases, sepsis. The bacteria involved are generally Streptococcus pneumonia, Haemophilus influenza type B and Neisseria meningitidis. The main autoimmune syndrome associated with inherited disorders is systemic lupus erythematosus (lupus). Lupus symptoms include joint pains, rash, fevers and various organ dysfunctions (lung, kidney, central nervous system, etc.).

Disorders in the classical pathway can include defects in the production of any component of the complement system. Deficiencies of components C1 through C4 can present with autoimmune complications and/or recurrent bacterial infections. The most common C1 disorder is C1q deficiency. C1q is one of the subcomponents of C1. C2 deficiency can be either partial or complete. Complete C2 deficiency is sometimes seen with IgG subclass deficiencies, as well as in conjunction with other autoimmune disorders. Partial C2 deficiency does not appear to have any clinical significance in most people. Complete C3 deficiency can lead to severe recurrent infections, as well as autoimmunity, but partial C3 deficiency does not appear to have any clinical significance. Deficiencies in the regulatory proteins factor H and/or factor I can lead to a secondary C3 deficiency. Total C4 deficiency often presents with early-onset lupus, and partial C4 deficiency can also predispose patients to the development of lupus. Often in cases of lupus, it can be difficult to discern whether a low C4 level is due to inherent deficiency in C4 or to increased amount of consumption secondary to the buildup of immune complexes as part of the disease process of lupus.

The components C5 through C9 form the membrane attack complex (MAC) that leads to direct destruction of bacteria. Deficiencies in any one of these components can predispose individuals to develop recurrent infections to Neisseria species. In the U.S., C5, C6 and C8 deficiencies are the most common among all MAC defects. C9 deficiency is most often seen in Japanese patients, and tends to be less severe than deficiencies in any of the other elements of the MAC because bacteria can still be destroyed by the components C5 through C8.

Assessment of the classical pathway function should always begin with an assay of the CH50 (total hemolytic complement), which measures the ability of a patient’s serum to destroy sheep red blood cells. The
value reported indicates the degree of dilution of the patient’s serum that can still destroy 50 percent of the sheep red blood cells. An elevated CH50 indicates high level of activity of the classical pathway of the complement system, but does not have any specific clinical meaning except suggesting the presence of active inflammation and immune activation. An undetectable CH50 can indicate the complete deficiency of any component of the system. However, given the fact that cell lysis (a process in which a cell is broken down or destroyed as a result of some external force or condition) can still occur without C9, even a complete deficiency of C9 may yield only a low but still detectable CH50 measurement. If the CH50 is low, then measurements of specific components can be performed. If the initial CH50 is low, the first thing to do is to repeat the test to rule out the possibility of an error from poor handling of the serum specimen since the CH50 can be reduced after prolonged exposure to room temperature.

Defects of the alternative pathway are extraordinarily rare. The most common defect of the alternative pathway is Properdin deficiency, which is an X-linked disorder (the gene only occurs on the X chromosome) that affects only males. Fewer than five cases have been reported for deficiency in factor D, and there is one reported case of factor B deficiency. Alternative pathway defects present with recurrent respiratory tract infections, meningitis and/or sepsis secondary to Streptococcus pneumonia or Neisserial species. Unlike the assessment of the classical pathway, the alternative pathway can be assessed by an assay called the AH50, which is not commonly available. If the AH50 is very low, then possibility of Properdin, factor B and factor D deficiency should be considered.

Management of patients with classical and alternative pathway defects requires persistent vigilance for infections, early initiation of antibiotics and adequate vaccinations. Patients should be taught to recognize early warning signs of severe infection such as stiff neck, rash, fevers, severe respiratory tract symptoms, etc. They need to seek medical attention right away from professionals who understand the significance of these disorders. Patients should receive all necessary vaccines, and are not at higher risk of developing adverse reactions from live viral vaccines. Complement deficient patients need to be vaccinated against the encapsulated bacteria such as Streptococcus pneumonia, Haemophilus influenza B and Neisseria meningitidis because they are at a higher risk of developing recurrent infections to these organisms. However, when these patients receive vaccines, they should be given protein-conjugated (i.e., Prevnar) rather than purely polysaccharide vaccines (i.e., Pneumovax) in order to mount a more robust immune response. Plasma replacement therapy is rarely done for complement deficient patients mainly because it is not practical and carries an increased risk of transmitting blood-borne illnesses. There is very limited experience or evidence of success, and it is currently not part of the standard of care.

The most common defect in the lectin pathway of complement activation is deficiency in MBL, a protein that attaches onto the surface of bacteria and triggers the activation of the complement cascade. MBL levels can be directly measured and are generally defined as being deficient when the level in the blood is lower than 500ng/ml. In many individuals, MBL deficiency is asymptomatic (since the other pathways of complement activation are still intact), but in some people, it can lead to recurrent bacterial infections. However, deficiency in MBL can predispose individuals to develop more severe symptoms if they have chronic inflammatory conditions. In addition, MBL deficiency in addition to another known defect of the immune system can lead to more severe and frequent bacterial infections. Both recombinant (synthetically made) and plasma-derived MBL products are commercially available, but are still currently under research investigation as a form of replacement therapy. The most likely indication for this investigational therapy may be patients diagnosed with MBL deficiency plus another known defect of the immune system who are suffering from severe acute bacterial infections.

Acquired Disorders

Some patients acquire complement deficiency as a consequence of another illness. There are a series of conditions that can lead to acquired disorders of the complement system. The
most common cause of acquired complement deficiency is lupus, which in half of all cases will result in a reduced level of C2, C3 and C4. Lupus is a disease associated with an increased amount of immune complex formation (antibody-antigen complexes), which accelerates the consumption of complement factors. Another condition associated with an increased amount of immune complex buildup is cryoglobulinemia. Cryoglobulins are proteins in the blood that will precipitate (separate out) at temperatures cooler than normal body temperature. Cryoglobulinemia can be a result of chronic viral hepatitis infection or can occur without any identifiable cause. Complement deficiency from cryoglobulinemia generally present with low C2 and C4 levels without a significant decrease in C3 levels.

Another acquired condition that leads to complement deficiency is the development of an autoantibody (an abnormal antibody that recognizes and targets normal elements in the body) called C3 nephritic factor, which leads to an overactivation and excessive consumption of C3. This condition leads to low C3, low factor B and low AH50, all of which indicate an alternative pathway defect. Since the classical pathway is not affected, the C4 level is usually normal. The presence of C3 nephritic factor often leads to the development of membranoproliferative glomerulonephritis (a severe form of kidney disease) during childhood, as well as an increased number of bacterial infections.

Since all complement proteins are made in the liver, severe liver disease can lead to a decreased production of those complement proteins resulting in lower levels in the blood. In patients with alcoholic liver disease, C3 and C4 levels may be reduced. However, liver disease would have to be quite advanced before seeing appreciably lower complement levels in the blood, so other conditions need to be considered for significantly low levels in patients with mild liver dysfunction.
**Disorders of Regulatory Proteins**

Regulatory proteins help activate and control the complement system. Defects in C1 inhibitor, factor H, factor I, CD55 (decay accelerating factor) and CD59 have been associated with human disease.

The deficiency of C1 inhibitor level or function leads to the development of hereditary angioedema (HAE). The extensive review of HAE, including its diagnosis, pathogenesis and treatment is beyond the scope of this article. In addition to C1 inhibitor being involved in the complement system, it is also involved in the kinin pathway that regulates the production of a potent vasodilator called bradykinin. Deficient level or function of C1 inhibitor ultimately leads to an excessive amount of production of bradykinin, which in turn leads to severe swelling. The swelling can occur in the extremities, on the face, the lips, tongue, throat or abdomen. A bradykinin-mediated angioedema is not associated with any hives, and does not respond to antihistamines, steroids or epinephrine. HAE can be treated either acutely or prophylactically by plasma-derived C1 inhibitor replacement therapy (Berinert or Cinryze, respectively). Antifibrinolytics and androgens were used more commonly for HAE in the past, but due to the rise of newer and more efficacious drugs, they are less commonly used today. For acute treatment of attacks, direct bradykinin receptor blockers (Icatibant) and kallikrein inhibitor (Ecallantide) have been shown to be efficacious in the treatment of HAE.

Factor H and I are elements that control and regulate the activation of C3. Therefore, if there is a complete deficiency (homozygous deficiency) in either one of these factors, an excessive amount of C3 would be consumed via the alternative pathway, and those patients would present similar to patients who have a C3 deficiency. The most common symptoms are recurrent bacterial infections. Partial deficiency (heterozygous deficiency) would predispose individuals to develop nondiarrheal hemolytic uremic syndrome, the HELLP syndrome (a pregnancy-related condition that is associated with kidney injury, anemia, low platelets and high liver enzymes) and age-related macular degeneration.

The cell surface proteins CD55 and CD59 protect our own blood cells from being damaged by the complement system. They block the activation of C3 and prevent the assembly of the C5 to C9 membrane attack complex from injuring our own cells. However, when someone is deficient in either one of those cell surface proteins, the complement system is no longer inhibited, which results in the destruction of the cell. Red blood cells are particularly vulnerable to this deficiency, which is why the main disease that results from this condition is paroxysmal nocturnal hemoglobinuria (PNH). In PNH, episodes of uncontrolled destruction of red blood cell occurs leading to significant anemia and to the presence of hemoglobin (the oxygen binding molecule in red cells) in the urine. Furthermore, PNH can predispose individuals to the development of low platelet counts and blood clots in the veins. Blood transfusions are important to prevent the anemia from becoming dangerous for patients, and oral steroids can be effective on an episodic basis to decrease the amount of red cell destruction, but long-term use of steroids is not advised due to the significant amount of side effects. In addition to blood transfusions and close monitoring of the blood cell counts, there is a targeted treatment medication called Eculizumab that has been shown to be effective. Eculizumab is a monoclonal antibody that targets C5 and prevents the initiation of the membrane attack complex, therefore preventing the destruction of the cell. Clinical studies of Eculizumab have shown that it is a safe treatment, and that it has significantly decreased the amount of red cell destruction and prevents the development of venous blood clots.

**An Essential Part of the Immune System**

The complement system is an essential part of the innate immune system that protects against recurrent infections. A normal complement system also regulates the process of inflammation in the body. It is a complex system that can malfunction when any particular component of the system is missing or reduced. When it malfunctions, individuals become vulnerable to not only bacterial infections, but also become predisposed to the development of autoimmune diseases. Complement disorders are rare and complex. Improving education about them will help increase awareness, as well as result in better care for patients.

BOB GENG, MD, MA, studied medicine at Washington University School of Medicine in St. Louis, where he also completed his residency training in internal medicine. He is currently a third-year fellow in allergy and immunology at UCLA Medical Center. Dr. Geng received his bachelor and master of arts in Georgetown University’s School of Foreign Service.

**References**

More than 10,000 patients and providers put their confidence in Hizentra.

Hizentra: Proven efficacy and safety in children age 2 years and older.

Hear perspectives from our patients and prescribers at: www.Hizentra.com/Perspectives

Important Safety Information

Hizentra treats various forms of primary immunodeficiency (PI) in patients age 2 and over.

WARNING: Thrombosis (blood clotting) can occur with immune globulin products, including Hizentra. Risk factors can include: advanced age, prolonged immobilization, a history of blood clotting or hyperviscosity (blood thickness), use of estrogens, installed vascular catheters, and cardiovascular risk factors.

If you are at high risk of thrombosis, your doctor will prescribe Hizentra at the minimum dose and infusion rate practicable and will monitor you for signs of thrombosis and hyperviscosity. Always drink sufficient fluids before administration.

Please see additional Important Safety Information on reverse side and brief summary of full prescribing information for Hizentra, including boxed warning, on adjacent page.
**Steady State / Low Volume:**
Hizentra delivers steady-state levels in half the volume of 10% solutions.*

**Confidence:**
More than 10,000 patients and providers put their confidence in Hizentra 20%.* Hizentra has demonstrated safety & tolerability in pediatric (2 years and older) through geriatric patients.

**Individualized Dosing:**
With the option of weekly or biweekly (every 2 weeks) dosing, Hizentra allows patients to work with their providers on a dosing schedule that works for them.

**Tolerated in Children:**
In a study with children and adolescents, patients & guardians evaluated the local tolerability of Hizentra therapy as very good or good for 98.5% of the infusions.

*Based on an equivalent dose in grams.

**Important Safety Information (continued)**

Tell your doctor if you have had a serious reaction to other immune globulin medicines or have been told you also have a deficiency of the immunoglobulin called IgA, as you might not be able to take Hizentra. You should not take Hizentra if you know you have hyperprolinemia (too much proline in your blood).

**Infuse Hizentra under your skin only; do not inject into a blood vessel.**
Allergic reactions can occur with Hizentra. If your doctor suspects you are having a bad allergic reaction or are going into shock, treatment will be discontinued. Immediately tell your doctor or go to the emergency room if you have signs of such a reaction, including hives, trouble breathing, wheezing, dizziness, or fainting.

Tell your doctor about any side effects that concern you. Immediately report symptoms that could indicate a blood clot, including pain and/or swelling of an arm or leg, with warmth over affected area; discoloration in arm or leg; unexplained shortness of breath; chest pain or discomfort that worsens with deep breathing; unexplained rapid pulse; and numbness or weakness on one side of the body. Your doctor will also monitor symptoms that could indicate hemolysis (destruction of red blood cells), and other potentially serious reactions that have been seen with Ig treatment, including aseptic meningitis syndrome (brain swelling); kidney problems; and transfusion-related acute lung injury.

The most common drug-related adverse reactions in the clinical trial for Hizentra were swelling, pain, redness, heat or itching at the site of injection; headache; back pain; diarrhea; tiredness; cough; rash; itching; nausea and vomiting.

Hizentra is made from components of human blood. The risk of transmission of infectious agents, including viruses and, theoretically, the Creutzfeldt-Jakob disease (CJD) agent, cannot be completely eliminated.

Before being treated with Hizentra, inform your doctor if you are pregnant, nursing or plan to become pregnant. Vaccines (such as measles, mumps and rubella) might not work well if you are using Hizentra. Before receiving any vaccine, tell the healthcare professional you are being treated with Hizentra. You are encouraged to report negative side effects of prescription drugs to the FDA. Visit www.fda.gov/medwatch, or call 1-800-FDA-1088.

**Reference:** 1. Data on File. Available from CSL Behring as DOF HIZ-003

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Leading the Way in SCIG Therapy
**HIZENTRA®, Immune Globulin Subcutaneous (Human), 20% Liquid**
Initial U.S. Approval: 2010

**BRIEF SUMMARY OF PRESCRIBING INFORMATION**
These highlights do not include all the information needed to use HIZENTRA safely and effectively. See full prescribing information for HIZENTRA.

**WARNING: THROMBOSIS**
See full prescribing information for complete boxed warning.
- Thrombosis may occur with immune globulin products, including Hizentra.
- Risk factors may include: advanced age, prolonged immobilization, hypercoagulable conditions, history of venous or arterial thrombosis, use of estrogens, indwelling vascular catheters, hyperviscosity, and cardiovascular risk factors.
- For patients at risk of thrombosis, administer Hizentra at the minimum dose and infusion rate practicable. Ensure adequate hydration in patients before administration. Monitor for signs and symptoms of thrombosis and assess blood viscosity in patients at risk for hyperviscosity.

**INDICATIONS AND USAGE**
Hizentra is an Immune Globulin Subcutaneous (Human) (IGSC), 20% Liquid indicated for the treatment of primary immunodeficiency (PI) in adults and pediatric patients 2 years of age and older.

**DOSAGE AND ADMINISTRATION**
For subcutaneous infusion only. Do not inject into a blood vessel.
Administer weekly or biweekly (every two weeks).

**Dosage**
Before switching to Hizentra, obtain the patient's serum IgG trough level to guide subsequent dose adjustments.

- Weekly: Start Hizentra 1 week after last IGIV infusion
  - Initial weekly dose = \( \frac{\text{Previous IGIV dose (in grams)}}{\text{No. of weeks between IGIV doses}} \times 1.53 \)
  - Biweekly: Start Hizentra 1 or 2 weeks after the last IGIV infusion or 1 week after the last weekly Hizentra infusion. Administer twice the calculated weekly dose.
  - Adjust the dose based on clinical response and serum IgG trough levels (see Dose Adjustment).

**Administration**
- Infusion sites – 1 to 4 injection sites simultaneously, with at least 2 inches between sites.
- Infusion volume – First infusion, up to 15 mL per site. Fifth infusion, up to 20 mL per site, then to 25 mL per site as tolerated.
- Infusion rate – Up to 15 mL per hr per site. Increase to 25 mL per hr per site as tolerated.

**DOSE AND STRENGTHS**
0.2 g per mL (20%) protein solution for subcutaneous injection

**CONTRAINDICATIONS**
- Anaphylactic or severe systemic reaction to human immune globulin or components of Hizentra, such as polysorbate 80
- Hyperprolinemia (type I or II) (Hizentra contains the stabilizer L-proline)
- IgA-deficient patients with antibodies against IgA and a history of hypersensitivity

**WARNINGS AND PRECAUTIONS**
- IgA-deficient patients with anti-IgA antibodies are at greater risk of severe hypersensitivity and anaphylactic reactions.
- Thrombosis may occur following treatment with immune globulin products, including Hizentra.
- Aseptic meningitis syndrome has been reported with IGIV or IGSC treatment.
- Monitor renal function, including blood urea nitrogen, serum creatinine, and urine output in patients at risk of acute renal failure.
- Monitor for clinical signs and symptoms of hemolysis.
- Monitor for pulmonary adverse reactions (transfusion-related acute lung injury [TRALI]).
- May carry a risk of transmitting infectious agents, e.g., viruses, the variant Creutzfeldt-Jakob disease (vCJD) agent and, theoretically, the Creutzfeldt-Jakob disease (CJD) agent.

**ADVERSE REACTIONS**
The most common adverse reactions observed in ≥5% of study subjects were local reactions (i.e., swelling, redness, heat, pain, and itching at the injection site), headache, diarrhea, fatigue, back pain, nausea, pain in extremity, cough, rash, pruritus, vomiting, abdominal pain (upper), migraine, and pain.

To report SUSPECTED ADVERSE REACTIONS, contact CSL Behring Pharmacovigilance at 1-866-915-6958 or FDA at 1-800-FDA-1088 or www.fda.gov/medwatch.

**DRUG INTERACTIONS**
The passive transfer of antibodies may interfere with the response to live virus vaccines, and any misinterpretation of the results of serological testing.

**USE IN SPECIFIC POPULATIONS**
- Pregnancy: No human or animal data. Use only if clearly needed.
- Pediatric: No specific dose requirements are necessary to achieve the desired serum IgG levels.

Based on September 2013 version
SICK FROM BIRTH, Hannah DeLacey spent her entire childhood and adolescence suffering from debilitating sinus infections and a chronic cough. At age 19, this tenacious young woman was finally diagnosed with common variable immunodeficiency (CVID), but by then, she was already a skilled equestrian, avid hula hooper and soccer player. Now a grad student, this 25-year-old “zebra” refuses to let illness define or limit her.

Trudie: Tell us about growing up with chronic illness.
Hannah: My entire life I was sick. I had a strong, harsh and persistent cough that was always present. Every time I went to the doctor, they would say it was asthma and prescribe a new inhaler. None of them helped. I would cough for hours straight. The coughing made it hard to pay attention and take notes in class. PE was traumatizing. At night, I would lie in my bed for hours, coughing and unable to sleep.

Trudie: How did you cope?
Hannah: Despite the chronic illness, I still strived to live a normal life. I kept my grades up. I was very active in 4-H. I showed cats, horses, did creative arts, and was a member of the state hippology and horse bowl teams. I was fortunate enough to be able to take horse riding lessons, and I played soccer and basketball for a number of years. Although these activities were enjoyable, they were also extremely stressful. I was incredibly embarrassed about my coughing.

Trudie: When were you diagnosed?
Hannah: When I was in high school, doctors found out that I had a severe sinus infection. I had what the surgeon said was the most invasive sinus surgery he had ever completed, but within a week, my cough and the sinus infection were back. When I was 19, I saw a pulmonary specialist who thankfully ordered more tests and discovered I had CVID. The best news was that there were treatment options. It has been six years since I started intravenous immune globulin treatment. It feels like a miracle; my life is completely different.

Trudie: What is your current treatment plan?
Hannah: I have weekly subcutaneous injections of Hizentra. I also have an inhaler for my asthma to use as needed. When I get a bad respiratory infection, I take antibiotics.

Trudie: Tell us why you took up hula hooping?
Hannah: Years ago, I saw girls hula hooping and doing tricks. As a child, the
most I even thought to do was hula hoop around my waist. It blew my mind seeing what they could do, and it looked like so much fun. After watching some YouTube videos, I realized how easy it would be to learn the basics. Hooping is something you can teach yourself and gradually get better at. This was really appealing to me because my health is not always good enough to be part of a team sport or be involved in more strenuous activity. Yet, I still like to challenge myself physically and learn new things. Over the years, I have been able to teach myself a lot of fun new tricks, and I still have a lot that I am excited to learn. I am taking a hula hoop to graduate school with me, just in case I get a study break.

Trudie: Have you ever felt judged when you tell people about your disease?

Hannah: Sometimes I experience discrimination from people who do not know about my condition. I still have a chronic cough, which gets a lot worse when I have been sick. I know I’m not contagious, but when I’m out in public, coughing like I have the plague, people often glare at me. If I am at work, school or sitting next to someone on the bus, I will politely tell them I am not contagious and not to worry. At this point, the glaring stops. When I tell new friends about my condition, they are often very interested, and want to know more about it. It usually comes up because I am coughing, and feel like I should explain why. And, sometimes, new friends share information about their health, and we can bond over being broken. I have yet to have someone say something incredibly rude about my health.

Trudie: What is your biggest challenge as a CVID patient, and how do you overcome it?

Hannah: I think the biggest challenge I face with CVID is the constant fatigue. It is hard working part time and going to school while being exhausted and likely overcoming a cold or getting a new one. I overcome it with a constant supply of strong coffee, and trying not to push myself more than I know my body can handle.

Trudie: How do you keep your disease from defining you?

Hannah: CVID does have a profound impact on my daily life, but I do my best not to let it have a negative one. I have chosen to find strength from my disorder. It does get really hard at times, though. I see my friends and peers living carefree lives, doing whatever they want, traveling to places I will never go. It is especially hard during the winter, when I get sick a lot more, being home, stuck in bed for a week, coughing so much I cannot sleep. But that is why delivery Thai food was invented!

Trudie: What has your disease taught you about yourself?

Hannah: In some strange way, there are good things about having been so sick when I was younger. It has taught me to be strong and not to give up. I learned to be persistent and that I am capable of overcoming anything I put my mind to. I am more thankful for my health and my life than many of my peers are. I am grateful for any moment I spend not coughing, and I’m grateful there is treatment available for me. I am proud of myself for being able to accomplish so much, despite factors that could have held me back. One of my life goals was always to attend a university. Although at times it seemed unachievable, I never gave up working toward that goal.

Trudie: You recently graduated from college, what are your career plans?

Hannah: I’ve already started graduate school attending the University of Amsterdam to study sociology. I am very excited to experience a new culture, while furthering my education. When I graduate, I may pursue a PhD.

Trudie: What advice do you have for other young adults facing life with chronic illness?

Hannah: Try to keep a positive attitude. With optimism and a positive attitude, I have been able to accomplish so much in life. I also think that talking to close friends and family about my condition has been incredibly beneficial. It is hard dealing with the knowledge that my health is so fragile. I hate to admit it, but I am scared, a lot. If I had not asked friends and family for support, they wouldn’t have known that I needed them during difficult times. I am also thankful to have an amazing mother who has always supported me and showed me that despite my chronic illness, I could succeed in any activity I put my mind to.

TRUDIE MITSCHANG is a staff writer for IG Living magazine.
No Negative Self-Talk

By Ever Fecske Mazza

FOR YEARS, I have found humor in putting myself down. I never realized I did it until recently, and I never bothered to consider how strong its effect is on my self-esteem. The strangest part is that I genuinely like myself. But, clearly, I’ve found the need for laughter far greater than the need to preserve my self-worth.

Crying is not and has never been an option for me. I’ve always known that crying over the things I can’t control is a great waste of energy. I very rarely have given myself the permission to be overcome by tears or sadness. Yet, while I truly believe that laughter is great medicine, looking back over the past 10 years, I am not so sure it’s the best medicine for coping.

I use laughter as a way to cope with the way I feel about what has happened to my body. Maybe it’s just a way to acknowledge the changes that have taken place in my appearance and the waning of my abilities. For example, after rapidly gaining 60 pounds on the drug we all love to hate, prednisone, I would tell people I was suffocating in my neck rolls, making whale references, and I would describe in detail how life-altering fried chicken tastes. And, people would laugh. But they laughed with me because I was laughing, too. And in that selfless moment, it made me and them feel better.

Living day to day with chronic illness is certainly a challenge physically. But, the mental toll is even greater, though often harder to see. I had no idea that the way I was coping with my adversity was actually detrimental to my well-being. In the moment, I responded the way I could. It’s my personality to laugh, so I would use it to relieve the tension around me and the sadness I feel: “If I can bring up the awkward and painful subjects like weight gain and frequent trips to the restroom with humor, I can take back the power.” I won’t have to feel awkward and neither will those around me.

For a long time, this worked. I was able to be honest and open about the more uncomfortable mishaps: a bathroom incident on a bridge or on a subway comes to mind (well, I guess lack of a bathroom is more accurate). I became a storyteller, a comedian, per se, and explained myself with light-hearted humor, because I knew it would be easier for my loved ones to understand through laughter.

To engage others and bring them into my crazy world was a way for me to remedy the loneliness of illness. But, now, I realize that I may have created a lack of empathy and compassion for some of the emotions I feel. Those around me only view me as funny, when really, I am a lot more than that. Sometimes I am scared, and a lot of the time I am stressed and anxious. I may have done myself a disservice by not acknowledging those feelings to others.

For me, laughing is far better than crying, but maybe I need to find a balance between the two. Perhaps, laughter directed somewhere other than myself is better than making jokes about myself.

I now realize that I have been making the feelings of others more significant than my own. I have made myself the butt of every joke in hopes of making my journey easier for everyone else. Only now, I see that this is my journey. It’s not always funny, and I have learned that it’s OK to put my feelings first. I want to love myself unconditionally. I want to love my neck rolls and my countless and horribly timed inconvenient bathroom excursions. But, it is my reality, and it’s not funny. We all need to tell ourselves how much we love ourselves and how proud we are of ourselves, because what we endure and survive is so much more than a silly joke. It’s an act of courage. As soon as we start believing it, everyone around us will, too.

EVER FECrage MAZZA was diagnosed with CVID and interstitial lung disease in 2004. She is a new mom of a sweet little boy named Boston, and loves every minute of it! She lives in Los Angeles, Calif., with her husband, and when she isn’t changing diapers and playing with her son, she enjoys wedding planning, baking, flower arranging, cooking, shopping and anything that sparkles!
It’s OK to Ask

By Ilana Jaqueline

I’D LIKE TO think that I’m usually pretty on top of things. Any time I go to the doctor for a physical exam or test, I politely ask that staff wash their hands and put on gloves before they touch me.

Doctors tend to go from room to room and patient to patient carrying files that have been passed from secretary to nurse to intern. They touch doorknobs and cabinet knobs, the lids of jars that hold their cotton swabs and the height controls on the exam table. A long story short: They’re a very “handsy” sort of people.

And, for patients with sensitive immune systems, these professionals’ forgetfulness or delusions of invincibility can be an excellent way of spreading disease.

Maybe as a kid you didn’t notice, but now that you’re in your 20s, it’s time to take charge of these risk factors. When it comes to hand-washing, it’s OK to ask. I’ve done it. Often. And, usually the response is: “Of course, I was going to wash my hands, I just hadn’t gotten there yet.” OK, fine. Whatever. I just thought I’d ask.

Washing hands has to be one of the first things they re-teach doctors in medical school, right? I know it’s on the kindergarten curriculum. I’m sure doctors in training get some sort of hand-washing refresher lesson. But, sometimes I have my doubts. For instance, two weeks ago, I was back in my regular bed at the local emergency room for a nightmare spiral of migraines that had left me, well, let’s call it under the weather.

“My head is exploding. Am I the only one seeing this light show?” I moaned to my mother. But before she could answer, a nurse walked in. He was trailing his vitals cart behind him and looked like someone had just spit in his cereal. He quickly glanced at my chart before grabbing the blood pressure cuff and walking over to me.

“Wait,” my mom said, because I was now holding my hands against my head so my brain wouldn’t fall out. “Can you wash your hands before you touch her? She has an immune deficiency.”

He gave her an exasperated look before bumping the cart toward my mother. He handed me the thermometer, but after three stabs of trying to get the plastic cover to snap on to the top, I gave up (I couldn’t even see straight).

“Out,” my mom said, “We’re done. We want another nurse.”

“Whatever,” he responded and walked out, sending another nurse into the room a few minutes later.

Moral of the story?

1) Always bring an advocate to the ER with you so they can help you stand up for your patient rights when you can’t.

2) The worst thing that can happen when a nurse or doctor refuses to wash their hands is they can say no, and you can ask for a different treating physician or nurse.

Sanitation is not an unreasonable request. Not in the hospital. Not in the doctor’s office. It’s your responsibility to advocate for yourself.

Having trouble with a doctor or nurse at your local hospital? Feel free to make a call to the administration, give them names and remind them that the U.S Centers for Disease Control and Prevention estimates that one of every 20 patients in a U.S hospital gets a hospital-acquired infection each year. Hand-washing reduces the number of people who get sick by 31 percent in those with healthy immune systems. Hand-washing reduced illness by 58 percent in those with weakened immune systems.

ILANA JACQUELINE

is a 24-year-old dysautonomia and primary immune deficiency disease patient from South Florida. She’s been writing professionally since 2004 on everything from health and wellness to celebrities and beauty. Her blog www.letsfeelbetter.com is both a personal collection of anecdotes about life with chronic illness, as well as a resource for patients of all ages.
IF YOU LOOK in the dictionary, you will find that the definition of family is referred to most as a group that is related by blood or marriage. You will also find a definition that states a family is a group of things related by common characteristics. In the world of chronic illness, the word “family” can take on many definitions, leaving me to ask the question: How do we determine who becomes a part of our family? Through our journey with primary immunodeficiency disease (PI), I have found that my daughter and I have several families, some of which might not fall under the traditional definitions.

Family of Non-Believers

Although we have been on this journey for nine years, we still have those people, friends and relatives alike, who do not believe this disease is real. I try to look at things from their perspective, and I do realize why they have come to believe the way they do. PI is a rare group of immune system disorders with very common symptoms. The commonality of those symptoms is what makes it difficult for the mainstream public to understand. I get this! In the beginning, it was difficult for me to understand as well. My daughter kept getting sick with common illnesses such as ear infections, strep, pneumonia, etc. She was in daycare and, thus, exposure to the many germs that young children can come in contact with was large. It was easy to dismiss the frequent bouts of sickness. After all, a child in daycare is going to get sick thing. People will believe only what they know and understand. It took many hours of research for me to understand and come to terms with what this disease meant and that this disease could become a lifelong battle for my daughter. I don’t expect everyone we know to conduct this same research just to understand what my daughter’s diagnosis means. If PI garnered as much research and publicity in the mainstream media as other diseases such as the many different types of cancer, Alzheimer’s, Parkinson’s and many others, I believe these specifically only because these are the diseases my daughter has already been tested for and is on the “watch list” for. The list of doctors she sees is ever growing. This list, so far, consists of a pediatrician, ENT, gastroenterologist, orthopedist, rheumatologist, psychologist and immunologist. Some PI patients have more specialists, while others have fewer. The fact remains, however, that these people become a big and important part of our family. Without this family of “ologists,” my daughter would not be healthy. I don’t even want to think of where she would be without these wonderful family members.

Family of Medical Professionals

The immune system affects several of the body’s organs, thus making it necessary to build a trusted family of medical professionals. This disease makes a patient more susceptible to common infections, as well as other diseases such as leukemia, lymphoma and autoimmune diseases like lupus, rheumatoid arthritis and many others. I mention these specifically only because these are the diseases my daughter has already been tested for and is on the “watch list” for. The list of doctors she sees is ever growing. This list, so far, consists of a pediatrician, ENT, gastroenterologist, orthopedist, rheumatologist, psychologist and immunologist. Some PI patients have more specialists, while others have fewer. The fact remains, however, that these people become a big and important part of our family. Without this family of “ologists,” my daughter would not be healthy. I don’t even want to think of where she would be without these wonderful family members.

Family of Social Networking

When a diagnosis is made of a rare unknown disease, a patient or caregiver is left devastated by the news and the search for information begins. With the Internet, there are many articles to be found with information on just about everything. But, just how reliable is all
that information? The information gained from trusted sources such as the National Institutes of Health, the National Organization of Rare Diseases and the Immune Deficiency Foundation, to name just a few, is priceless. But, who is a more trusted resource of information than a fellow patient or caregiver struggling with the same disease? Social networking has allowed these otherwise strangers to get “connected” and become a part of our family. I have gained as much knowledge from our social networking family as I have from our medical professional family. This family can help guide me when something arises that I am unsure about. I can post a question and instantly get advice as to how they have dealt with similar issues. I can read other posts to learn what may lie ahead for my daughter, thus allowing me time to prepare for the “what ifs.” This family has taught me how to maneuver through the medical world and stay on top of this disease, and it has helped me to gain the knowledge and strength to help my daughter get through each illness that comes her way. This family, like the medical professionals, is an important part of our lives.

Family of Compassionate Friends

Everyone has friends. There are friends, and then there are friends who truly understand our circumstances. This group of family members consists of those people who are not related by blood or marriage, but have a place in our hearts as if they were. It is made up of people who have taken the time to read, research and understand the disease they are now connected to through friendship. This family is made up of people who have taken the time to lend a helping hand, or have offered a shoulder to cry on or just the time to allow a patient or caregiver to talk, yell or scream and have a moment of breakdown without judgment. These members of our family find ways to uplift and keep us strong. This family gets involved and helps keep the focus on fighting this disease and providing an emotional outlet when needed. I could go on and on about what this family means to the patient or caregiver, but there are not enough words to describe their importance.

True Family

This family is the one that is closest to us: our husbands, wives, parents, grandparents, brothers, sisters, aunts and uncles. This family includes our step parents, step brothers, step sisters, our partners and our significant others. These are the closest members of our overall family. This group of people, like the family of compassionate friends, sees us at our worst and at our best and everything in between; they are right there beside us every step of the way. They celebrate the victories with us and they console us in our defeats. They are the first ones we reach for when times are good and when times are bad. This group is our first line of defense against this disease. Without this core group of people, life with a rare chronic disease would be a much more difficult road to travel. Their love and support is unconditional, which makes them the most important of all the families.

A Connected Family

As you can see, family can mean different things to different people. This is our family, and I love and treasure each and every one of them. From the non-believers who keep me motivated to educate and promote awareness, to the medical professionals who use their skills to care for my daughter, to the compassionate friends who provide the focus and emotional outlet, to the true family that keeps me grounded and my spirit alive, our lives would not be complete without any of them.

DONA DARR is the mother of Emily who was diagnosed with IgG subclass deficiency and complement deficiency. Dona and Emily have been dealing together with this disease since 2004, when Emily was initially diagnosed. Dona and her support system of family and friends will continue to care for and encourage Emily for the rest her life.

Reprinted with permission from Dona Darr’s blog titled Our Journey with Primary Immunodeficiency Disease at donadarr.blogspot.com.
I’VE BEEN “DOING” this primary immune deficiency disease (PI) stuff going on 17 years. I’ve seen the highs and the very lows this disease can bring, and I have an arsenal of anecdotes that can withstand any heated debate over the “healthiest-looking sick people” on planet Earth. What I’ve also discovered during these past few years is when and how to pull out my “PI card.” You know what I’m talking about ’cause you’ve used it too! When faced with a potentially threatening/bodily harming or great physical inconvenience/extreme waiting period, you dramatically announce: “I really don’t like to say this, and I rarely do, but (insert PI person’s name here) has an immune deficiency and he/she/they can’t walk that far/stand that long/be in the same room with other sick people. Can you please allow us to park closer/move to the front of the line/seat us sooner/move us to a quiet room with all the best tabloids and air conditioning/heating?”

Because I have been an active user of the PI card — only when appropriate, I assure you — I have authored the dos and don’ts of when and when not to pull it out. I will share a couple of my favorites here. Use at your own risk of embarrassment, humiliation, confrontation and potential incarceration.

_Do No. 1:_ We were in Florida on our way to the Immune Deficiency Foundation’s bi-annual conference. Our travels to the “happiest place on earth” quickly became unhappy when our then-4-year-old PI kid, Molly, developed a raging ear infection most likely from the hotel’s pool water. When we finally arrived at Shands of Live Oak Hospital’s ER (Southern Florida could really use a few urgent care facilities), a bleach-blonde, 5-foot-nothing, pear-shaped, 68-year-old security guard greeted me in the parking lot with: “Wohlkom to mi-yah niahtmaryahre” (translation: welcome to my nightmare). After successfully dodging the circular glass doorway without losing a limb, we were gracefully spit out into the very full waiting room.

I felt the eyes of every patient turn away from watching Roseanne blaring from an itty-bitty TV safely tucked behind a series of bars protecting the screen from a potential violent occurrence, and look our way.

“Y’all gotta push the button for the nurse,” instructed a very sweet “memaw”-type with a retro beehive ’do piled on top of her head.

She must have known we were weary travelers from a foreign land (Idaho) by the obvious lost/terrified look on our faces. After I pushed the button, out popped a battle-axe-type nurse who probably could rip you limb from limb and then be able to put you right back together again.

“Y’all just missed the excitement,”
she said, studying the check-in sheet.

“Uh, what did we miss?” I asked, quivering with fear, as I do not speak with a drawl of any kind.

“Oh, a few of our patients in the waiting area became angry when we took a little girl who had just walked in before a man who had been here for a while. They don’t understand emergency room triage procedures; we must take the young-uns before the middle-aged no matter how numb their hind-parts are from sittin’,” she said matter-of-factly. “Now, what is it I can do for y’all?”

Even though you risk certain death, do you mention your child has an immune deficiency, and in hospital situations, it is recommended he/she be separated from the general public? At this point, not only were we trying to protect ourselves from crypto parasites, rotavirus, flu germs and their various friends, but also from certain death by ticked-off Southerners who might take umbrance at our daughter’s ear infection being treated before their buddy’s bloodied limb.

In our case, we ended up in a corner of the ER with a TV (ESPN/Final Four) and crayons to entertain Molly. Even the beehive struck up a conversation with me about her husband’s constant need for the ER on Friday nights. “I swear to Pete if we didn’t come to the ER every Friday, we’d be bored to tears!” she exclaimed.

Don’t No. 1: When an angry mob of patients who are bleeding, dripping bodily fluids, holding broken body parts or excreting the disgusting and highly contagious, do not forget to mention that your PI kid is a germ factory in her own right and should be isolated so as not to endanger the good town folk of Live Oak, Fla. Also, do not forget to clean out your ears: To this day, Mark and I still debate over whether the beehive enjoys witchcraft and drove a hole through a bird or if she likes to do woodwork and accidentally drove a nail though a board.

Don’t No. 2: Frankly, PI people in general don’t belong in recreational facilities, specifically bowling alleys, as I’m sure the Centers for Disease Control and Prevention would have a field day with just one thumb hole of a public bowling ball. That said, bowling is a cheap form of entertainment for those of us with expensive diseases. What isn’t entertaining is watching my pubescent PI daughter literally throw her ball, not to mention my patience, down the slick wooden alley. And, because my PI kid has other interests (like anything but bowling), throwing one gutter ball after another despite my best attempts at coaching the proper bowling technique and threatening her with dozens of “will you knock it off?” and “will you get serious,” she insists on rolling the ball between her legs as her last resort. It is now my chance to play my PI card and stop the misery.

“Well, she looks well over the age of 8, our cutoff for using the bumpers,” the attendant reminds us.

“Yes, I know. But could you make an itty-bitty exception in our case?” I asked.

“Um, I don’t know. Let me ask my manager.” Who, at the time, was stuffing a gooey grilled cheese sandwich in his face.

“The rules are pretty strict,” the cheesy manager tried to explain.

“Can you please make an exception in our case?” I beg. (Here comes our “do” moment.) “Our daughter who keeps throwing the gutter balls has a PI and is infusing human plasma as we speak (true story for us, but when bringing out the ‘big guns,’ you’d better have the ammo to back her up!). Anyway, she’s having a hard time controlling the ball with the needles in her belly, so could you, just this once, allow her to use the bumpers so we all could enjoy our Sunday afternoon?”

The manager gave us a sheepish grin, then OK’d bumper play for one haggard Haggard, just to prove it is all right, every once in a while, to make exceptions to the rules.

Don’t No. 2: Don’t take a pubescent girl, with or without a PI, to a bowling alley in the first place. Period.

So you see, my friends, there are appropriate times when and when not to use your PI card. Our family has enjoyed many years of gently broaching the subject with little guilt or embarrassment inflicted on our PI kids. But, should you have any further questions or comments on the subject of using your PI card, please don’t hesitate writing to me at Mail Stop 5, Inmate #689020, Cell Block #B.

CHERYL L. HAGGARD is a stay-at-home mom and has three children with PI, two of whom have CVID.
**Depression and PI: Avoiding the Blues**

Many children with a chronic illness feel depressed, especially during the holidays, but there are many strategies parents can use to help them deal with the sadness.

By Mark T. Haggard

**WHEN MY DAUGHTER** was younger, she complained about having a primary immunodeficiency (PI) and being “poked” twice a week. I told her that God made her “special” and had a “purpose” for her life. But, she didn’t want to be special and didn’t buy into any talk about a purpose. Frequent sickness and the unrelenting schedule of needle sticks left her in low spirits.

Feelings of depression in PI kids can be caused or exacerbated by a number of things: not being as healthy as other children, not being able to engage in the same activities and being isolated because of frequent sickness. Then, come the holidays. According to the National Institutes of Health, the Christmas season prompts the highest incidences of depression in the general population. Forty-five percent of respondents in a poll conducted in the United States and Canada said that they dreaded the Christmas season. So, what can parents do to help their children cope with the blues, especially around the holiday season?

**Steps for Handling Depression**

Sadness associated with adjusting to a life-changing situation, like a diagnosis of PI, is grief. Children need time to process and to grieve — to be sad or angry about what they have lost. They need time to consider their new normal. Deborah Serani, PsyD, author of *Living with Depression: Why Biology and Biography Matter along the Path to Hope and Healing*, explains that grieving people should not be made to feel ashamed about their grief. Although left unattended too long, grief may become depression.

When grief turns into depression, a psychological condition, it must be handled by a health professional with a regimen of medication and therapy. If children are feeling persistently sad or anxious, plagued by physical complaints, unable to sleep, are irritable and hopeless, and unable to face routine chores, parents should take them to talk with a doctor or a mental health professional. In addition, parents should ensure their children make healthy lifestyle changes such as getting the correct amount of sleep, eating well and exercising. Too much sleep worsens feelings of depression, and too little sleep creates mania. What’s more, a poor diet intensifies exhaustion and impacts mood. Fortunately, something as simple as walking decreases feelings of depression. In fact, as little as 30 minutes of cardiovascular exercise can provide an immediate mood boost similar to the effects of antidepressant medications.

Serani recommends parents take a proactive approach concerning the things that cause feelings of depression for their children such as what pushes their buttons and sets them off. And, they should steer their children away from people who are “toxic” and avoid them. However, children shouldn’t be isolated; isolation is the worst enemy of those suffering from feelings of depression. Instead, children with tendencies toward depression need
encouragement to seek out connections that lift their spirits.

Other experts provide these recommendations for parents to help their children fend off depression during the holidays:

1. Get them help. Seek out a mental health professional who can evaluate them and determine if they really are depressed.

2. Allow children to acknowledge their feelings. It’s normal to feel sadness and grief, and it’s OK for children to take time to cry or express feelings. Parents cannot force their children to be happy just because it’s the holiday season.

3. Teach children to be grateful for what they have in life, rather than letting them focus on what they don’t have. Parents can help their children avoid excessive rumination about their lives and the potential limitations of their disease.

4. Don’t accept any “perfect” representation of Christmas that the media, institutions or other people try to impose on others. Media representations of the ideal Christmas with images of smiling family and friends on commercials and TV shows are in stark contrast to what many experience. Smiles are often absent from kids who have not developed strong friendships because of their disease. Parents can lower their children’s expectations and any attachments to what the holidays should look like, and they should focus on being present and enjoying each moment as best as they can. If children aren’t up for an event, it’s OK to leave and tell others: “We’re not up for this right now.”

5. Allow children to say no. Saying yes when parents should say no can leave their PI kids feeling overwhelmed. Friends will understand if you cannot participate in every project or activity.

6. Reach out to others. When feeling lonely or isolated, seek out community, religious or other social events that can offer support and friendship. Parents can take action and suggest their kids do interesting and fun things and focus on what the holidays are about: loving, kindness, generosity of spirit and gratitude for others in their lives.

7. Volunteer. Take your kids with you to volunteer your time to help others. Work at a soup kitchen, organize a gift drive or simply help the neighbor dig the snow out of his driveway. Take part in church or synagogue activities that focus on the true meaning of Christmas or Hanukkah.

8. Don’t abandon healthy habits. Overindulgence during the holidays only adds to stress and guilt. Give kids a healthy snack before holiday parties so they don’t go overboard on sweets. And, make sure that children get plenty of sleep and physical activity such as going to play in the park.

Have a Merry Christmas and Happy Holidays

I have been fortunate. Although my daughter has lamented her condition, she has never suffered from the holiday blues. She loves the lights, music, decorations and presents too much. If this is not the case for your children, there are numerous helpful tips available on how to handle the holiday blues, many of which can be applied to children with chronic illnesses such as PI. Using these strategies may prove effective in achieving a happy and healthy holiday for your children.

MARK T. HAGGARD is a high school teacher and football coach, and has three children with PI, two of whom have CVID.

Resources

Have a Merry Christmas and Happy Holidays
Specialty solutions in Chronic Care.

Making a difference—one patient at a time.

Offering safe, convenient & reliable solutions for home infusion and critical-care products.

- Immune Globulin Subcutaneous
- Immune Globulin Intravenous
- Antihemophilic Factors

NuFACTOR has earned The Joint Commission’s Gold Seal of Approval

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www.NuFACTOR.com

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Just Fine: Unmasking Concealed Chronic Illness and Pain
Author: Carol Sveilich
Publisher: Avid Reader Press

Nearly everyone knows someone who is living with a health challenge that is difficult, if not impossible, to detect in their appearance and demeanor. Just Fine discusses this dichotomy of looking one way while feeling another. This topic is explored not only with words, but with original portraits, because the true story of looking one way while feeling quite differently requires both. This book approaches hidden health disorders in a powerful and telling tale. The author interviewed and photographed more than 50 people of all ages and from all walks of life who live with a wide variety of concealed disorders. She also consulted with numerous medical and mental health professionals to explore the juxtaposition of looking one way while feeling another.

The Immune System Recovery Plan: A Doctor’s 4-Step Program to Treat Autoimmune Disease
Author: Susan Blum, MD, MPH
Publisher: Scribner

In The Immune System Recovery Plan, Dr. Susan Blum, an expert in the field of functional medicine, shares the four-step program she used to treat her own serious autoimmune condition and help countless patients reverse their symptoms, heal their immune systems and prevent future illness. Dr. Blum’s method focuses on using food as medicine, understanding the stress connection, healing the gut and digestive system and optimizing liver function. Each of these sections includes an interactive workbook to help readers determine and create their own personal treatment program. Also included are recipes for simple, easy-to-prepare dishes to jump-start the healing process.

Your Doctors’ Manners Matter: Better Health Through Civility in the Doctor’s Office and in the Hospital
Authors: Barry Silverman and Saul Adler
Publisher: BookLogix

Your Doctors’ Manners Matter is written to assist patients in identifying physicians and other medical professionals who practice medicine in a way that exhibits compassion, empathy and respect for the dignity of their patients. In this book, patients will learn what to do if they are not satisfied with the care they are receiving in the hospital. The authors explain why physicians interrupt patients while they are describing their illness and what to do in response. They also discuss how to work with physicians to incorporate medical treatments into patients’ daily routines.

The Value of BCG and TNF in Autoimmunity
Author: BCG and Autoimmunity Working Group
Publisher: Elsevier

This book, intended for clinical researchers and scientists working in the autoimmunity or immunology fields, is the first comprehensive overview of research underway with the bacillus Calmette-Guerin (BCG) vaccine and tumor necrosis factor (TNF) induction in autoimmune conditions. It features proceedings from the First International Conference on BCG and TNF Signaling in the Treatment of Autoimmune Diseases, which was held in London in October 2013. BCG is actively being studied as a treatment for autoimmune diseases such as type 1 diabetes and multiple sclerosis, which do not have a cure. The book provides a rationale for the use of BCG at the forefront of clinical trials in autoimmunity.
Traveling with PI

Having a primary immunodeficiency (PI) need not limit your ability to travel, but it does call for extra precautions and patient-specific travel aids.

By Trudie Mitschang

TRAVEL IS STRESSFUL and often unpredictable. For PI patients, stress levels can be even higher, since oftentimes travel comes with health threats unique to the immune-compromised community. The good news is, with proper planning, you can avoid airborne illnesses and safely enjoy your time away, even during the hectic and often infectious holiday travel season.

Planning Ahead

In addition to all the normal parts of planning for a trip, you’ll want to take time to prepare in advance for everything impacted by your PI. Abbie Cornett, IG Living magazine’s patient advocate, suggests patients consider their infusion schedules when booking vacation dates and, if possible, schedule their infusion just before leaving and immediately upon return. “I always plan infusions around travel dates, but for an extended trip, you need to find an infusion center or doctor in the area where you are visiting,” says Cornett, who is also a common variable immune deficiency patient.

Cindi Berry, RN, BSN, IgCN, clinical educator for NuFACTOR Specialty Pharmacy, offers these additional travel tips:

• Always have an emergency contact available locally in the area you are visiting.
• Make sure you know the location of the closest hospital and emergency room.
• Have a medical identification card/jewelry on hand in case of an emergency.
• Always contact your specialty pharmacy when traveling to keep them informed. It may need additional orders from your prescribing MD if you are traveling to a different state.

Tips for Air Travel

When packing for a plane trip, it’s a good idea to place medication and supplies in your carry-on or in a bag designated for medication so that you can easily access it. This also eliminates the risk that needed medications could be lost with checked luggage. Prior to your trip, be sure to ask your immunologist if you should bring antibiotics or other medications in case you become ill. Transportation Security Administration (TSA) allows medications past airport checkpoints once they have been screened; just be sure to keep your medications in their original containers. Also, your healthcare provider should write a letter of necessity for medications such as immune globulin and infusion supplies. TSA offers a notification card that can be used by travelers with disabilities or medical conditions, but the card does not replace a letter of necessity written by your physician. Your medical supplies are also protected from many of the airport security rules; for example, medications may be carried onto the plane in quantities greater than the 3.4-fluid-ounce limit required for other liquids. You can learn more about travel with medications from the TSA website at www.tsa.gov/traveler-information/what-expect-if-passenger-needs-medication.
Make Prescriptions Portable
The SafeTote Rx portable medication storage container holds up to eight standard prescription bottles, keeping them organized, safe and secure. The locking zipper bag is constructed with a durable, scratch-resistant, leather-like acrylic polyurethane vinyl outer material with protective Oxford Terylene interior lining to safeguard your medicine. It comes with an optional TSA lock with universal key for airport security inspection. $14.99 with free standard shipping at www.safetoterx.com

Kill Germs Naturally
Clean Well hand sanitizers kill germs with a patented formulation of thyme. This all-natural formula lets you say goodbye to germs naturally in an alcohol and Triclosan-free formula that is non-toxic and safe for kids. Made from rapidly renewable botanical sources, Clean Well products are certified cruelty-free. They are available in several sizes; for travel, consider the Pocket Wipes pack (80 count total). $26.99 at www.cleanwelltoday.com

Breathe Easy
Sometimes it’s best to use a protective face mask when traveling by air. A decorative design can make this necessary precaution easier for small travelers. The Breathe Healthy Face Mask for kids contains an antimicrobial germ-killing agent and filters air down to 1.0 micron to help to protect against most types of dust, pollen, mold spores, pet hair and dander, various bacterial allergens, and cold and flu germs. It is washable and reusable in over a dozen prints. $14 with free shipping on Amazon.com

Catch Your Flight, Not an Infection
Kleen Getaway Air Travel Pack contains everything you need to keep infections at bay during air travel. Developed in response to television stories like “How Dirty is Your Plane” (CBS) and “Flying the Filthy Skies” (NBC), this travel-ready pack contains travel essentials to disinfect and sanitize personal seating areas on commercial jets, plus travel size must-haves like aspirin, bandages and stain remover. The pack is TSA-compatible. $12.95 plus shipping on Amazon.com

Keep Your Cool
Most subcutaneous immune globulin products do not require refrigeration. To be safe, it may still be a good idea to store product bottles in a cooler or insulated container in case of unexpected temperature changes such as when items are left in a hot car. The PackIt insulated bag is free of harmful PVC, BPA, phthalates and lead, and is made with nontoxic materials. $19.99 at www.packit.com

useful gear for packing your bags
Ataxia Telangiectasia (A-T)
WEBSITES
• A-T Children’s Project: www.atcp.org

Chronic Inflammatory Demyelinating Polyneuropathy (CIDP)
WEBSITES
• GBS/CIDP Foundation International: www.gbs-cidp.org
• The Neuropathy Association: www.neuropathy.org

Evans Syndrome
ONLINE PEER SUPPORT
• Evans Syndrome Research and Support Group: www.evanssyndrome.org

Guillain-Barré Syndrome (GBS)
WEBSITES
• GBS/CIDP Foundation International: www.gbs-cidp.org
• The Neuropathy Association: www.neuropathy.org

Idiopathic Thrombocytopenic Purpura (ITP)
WEBSITES
• ITP Support Association – UK: www.itpsupport.org.uk
• Platelet Disorder Support Association: www.pdsa.org

Kawasaki Disease
WEBSITES
• American Heart Association: www.heart.org/HEARTORG/Conditions/More/CardiovascularConditions/ChildhoodKawasaki-Disease_UCM_308777_Article.jsp#T1T2boePWE0
• American Academy of Family Physicians: www.aafp.org/afp/2006/1001/p1141.html
• Kawasaki Disease Foundation: www.kdfoundation.org
• KidsHealth: kidshealth.org/parent/medical/heart/kawasaki.html

Mitochondrial Disease
WEBSITES
• United Mitochondrial Disease Foundation: www.umdf.org
• MitoAction: www.mitoaction.org

Multifocal Motor Neuropathy (MMN)
WEBSITES
• The Neuropathy Association: www.neuropathy.org

Multiple Sclerosis (MS)
WEBSITES
• All About Multiple Sclerosis: www.mult-sclerosis.org/index.html
• Multiple Sclerosis Association of America: www.msaa.com
• Multiple Sclerosis Foundation: www.msfocus.org/learn-about-multiple-sclerosis.aspx
• National Multiple Sclerosis Society: www.nationalmssociety.org

ONLINE PEER SUPPORT
• Friends with MS: www.friendswithms.com
• MSWorld’s Chat and Message Board: www.msworld.org

Myasthenia Gravis (MG)
WEBSITES AND CHAT ROOMS
• Myasthenia Gravis Foundation of America (MGFA): www.myastheniag.org

ONLINE PEER SUPPORT
• Genetic Alliance: www.geneticalliance.org

Myositis
WEBSITES
• The Myositis Association: www.myositis.org
• International Myositis Assessment and Clinical Studies: www.niehs.nih.gov/research/resources/collab/imacs/main.cfm

ONLINE PEER SUPPORT
• The Cure JM Foundation: www.curejm.com
• Michigan Immunodeficiency Foundation: www.srfcure.org

Myositis Association Community Forum: tumacommunityforum.ning.com
• Myositis Support Group: www.myositisupportgroup.org
• Myositis Support Group – UK: www.myositis.org.uk

Pemphigus and Pemphigoid
WEBSITES
• The International Pemphigus and Pemphigoid Foundation: www.pemphigus.org

Peripheral Neuropathy (PN)
WEBSITES
• Neuropathy Action Foundation: www.neuropathyaction.org
• The Neuropathy Association: www.neuropathy.org
• Texas Chapter of the Neuropathy Association: www.handsfeetheart.org

Primary Immune Deficiency Disease (PI)
WEBSITES
• Immune Deficiency Foundation: www.primaryimmune.org
• Jeffrey Modell Foundation: www.info4pi.org
• The National Institute of Child Health and Human Development (NICHD): www.nichd.nih.gov/publications/pubs/Pages/primary_immuno.aspx
• International Patient Organisation for Primary Immunodeficiencies (IPOPI) — UK: www.ipopi.org
• New England Primary Immunodeficiency Network: www.neplin.org
• Rainbow Allergy-Immunology: www.uhospitals.org/rainbow/services/allergy-immunology

ONLINE PEER SUPPORT
• IDF Common Ground: www.idfcommonground.org
• IDF Discussion Forum: idffriends.org/forum
• IDF Friends: idffriends.org
• Jeffrey Modell Foundation Message Board: www.info4pi.org
• Michigan Immunodeficiency Foundation: www.familiesofchildren.org/108048062584350

Scleroderma
WEBSITES
• Scleroderma Foundation: www.scleroderma.org
• Scleroderma Research Foundation: www.srfcure.org
• Scleroderma Center: www.hopkinsmedicine.org/rheumatology/clinics/scleroderma_center.html

ONLINE PEER SUPPORT
• Scleroderma Support Forum: curezone.com/forums/f.asp?f=404
• International Scleroderma Network: www.sclero.org/support/forums/a-to-z.html

Stiff Person Syndrome (SPS)
WEBSITES
• American Autoimmune Related Diseases Association Inc.: www.aarda.org
• Genetic Alliance: www.geneticalliance.org
• Living with Stiff Person Syndrome (personal account): www.livingwithsp.com
• Stiff Person Syndrome: www.stiffpersonsindrome.net

For a more comprehensive list of resources, visit the Resources page at IGLiving.com.
The Products you need when you need them.

- Flu Vaccine
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- Coagulation Products
- Hyperimmunes
- Albumin
- Other Vaccines and Specialty Biologicals

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