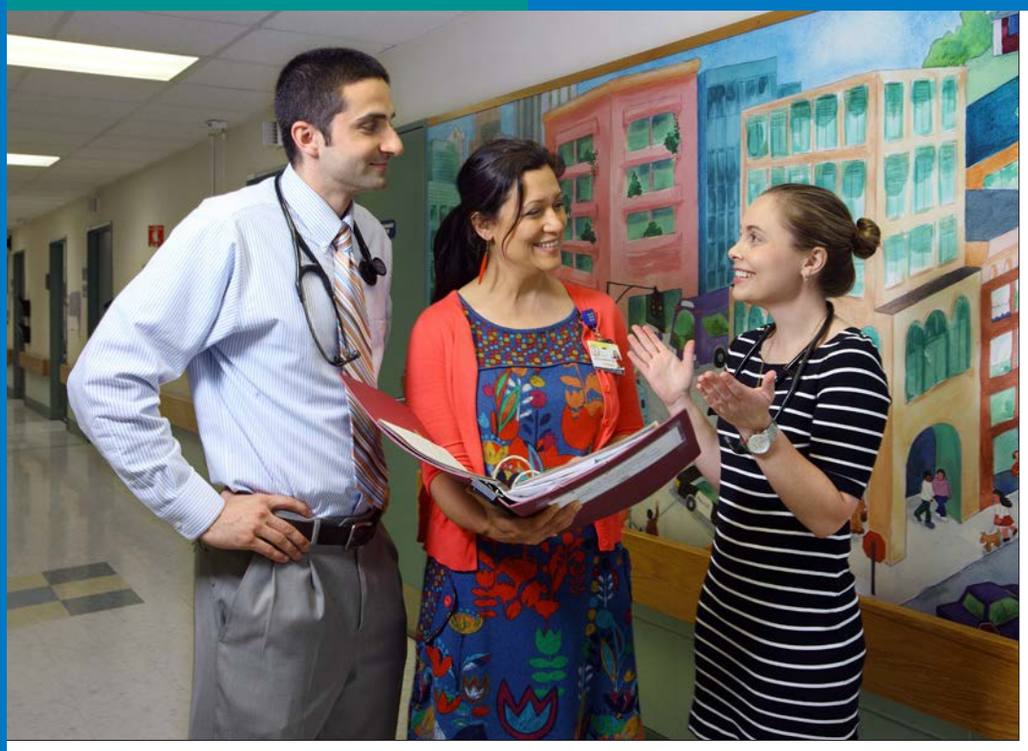
JOHNS HOPKINS CHILDREN'S CENTER

Pediatrician

SPRING 2013



Second-year pediatric resident Jessica Knight-Perry, right, consults with hospitalists Eric Balighian and Sheila Hofert on the pediatric ward at Saint Agnes.

A Community Rotation

Going back to the basics, Saint Agnes molds future leaders and teachers in pediatric medicine.

The Johns Hopkins pediatric residency program is not for want of reputation. Former residents cite robust clinical experiences and increasing levels of independence in what they describe as one of the most prestigious, sought after programs in the country. But housed in the brand new Charlotte R. Bloomberg Children's Center, what the program is not is hands-on pediatric medicine in a community hospital setting.

So, how do these residents face the less-chronic, less-complex conditions they're likely to encounter more often in community practice? Where do they accumulate early leadership experiences and opportunities to work closely with community pediatricians? The answer is their rotation at Saint Agnes Hospital, perched on a hill less than 10 miles south of the Johns Hopkins campus.

"The idea was to compliment the resident's experience at a tertiary hospital with what happens in a community hospital," says Saint Agnes Pediatrics Chairman **Michael Burke**. "Here they focus on more bread-and-butter inpatient pediatrics."

Since 1992, explains Burke, the 20-bed pediatric inpatient unit at Saint Agnes has been home to Hopkins pediatric residents for 3 ½ months of their 3-year residency. A recent rejuvenation of the Saint Agnes campus, including a plush patient tower, lends a modern look to a hospital with origins in the 1860s. But the pediatric ward—with the traditional central nursing station and children's art lining the hallways—has retained a comforting, community hospital feel.

Here Hopkins interns treat generally healthy kids who are admitted for a day or two due to conditions like an asthma attack or a urinary tract infection, though diagnostic challenges do occur. They also do procedures, like laceration repairs and blood draws, that other services perform at Hopkins. These interns are supervised by 2nd year residents, and the following year they become those 2nd year leaders.

"It's one of the few rotations where 2nd year residents get to act as supervisors," notes Hopkins Pediatrics Residency Director **Janet Serwint**. "But geographically separated from Hopkins, they have to learn how to think more independently and decide when a patient needs a more tertiary care placement because they don't have ready access to our specialists."

Saint Agnes hospitalist **Eric Balighian**, who went through the rotation four years ago, agrees, noting that greater autonomy encourages greater effort.

"If the onus is on you to make the treatment decision, it's more challenging and you feel that pressure, that responsibility," says Balighian. "You think harder, you research harder, and you ask more questions because you want to make the right decisions."

Saint Agnes Hospitalist **Sheila Hofert**, another veteran of the pediatric residency rotation, also cites this independence as a hallmark of the program. She notes that

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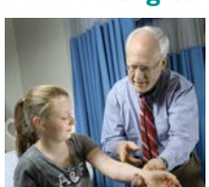
Food Allergies



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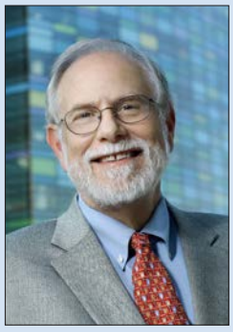

George Dover, M.D.
Director, Johns Hopkins Children's Center Given Professor of Pediatrics

An Epic Undertaking

We've always tried to be aware that your patients are your patients and that your relationship with them continues well after you refer them to Johns Hopkins Children's Center for specialty care. However, keeping tabs on that care hasn't always been easy. For outpatient care we might have sent you a fax or letter, for inpatient care an admission notice and discharge summary. Sadly, we did not give you easy, interactive access to more information. That's about to change.

Through our new electronic medical record Epic—and its online portal Johns Hopkins CareLink—in the not-too-distant future you'll be able to receive real time alerts about your patients' outpatient visits, hospital admissions and discharges, as well as your patient's chart with test results and imaging reports. Also, physicians logged on to the free portal will be able to send secure messages to Children's Center physicians with questions or comments about their patients' care and order consults with our specialists.

CareLink follows months of developing and rolling out Epic, used by more than 250 healthcare organizations nationwide, as one unified patient record system for our entire Hopkins system. Starting this summer, via CareLink, we'll be making Epic available to pediatric practices in the community and, at some point, to patients through another Epic portal, MyChart.

This has been an immense effort, but we believe Epic will make tracking patients easier than ever for all of us and also improve patient safety—for instance, by prompting physicians to avoid potential drug interactions and improper medication dosages. For more information and enrollment instructions, please visit **www.hopkinsmedicine.org/carelink.**

Thank you and enjoy this issue of *Pediatrician.*

Pediatric allergist Robert Wood with his young patient, Lexi Rosa

Eating Up Food Allergies

There was no doubt that Alexandra "Lexi" Rosa suffered food allergies—soon after her birth she was diagnosed with milk intolerance, at 21 months she got sick on peas, followed by signs of anaphylaxis when she tried some Thai chicken with peanuts. At the pediatric allergist's office, there was also little doubt about her recommended course of treatment—avoid allergenic foods, treat reactions, and watch and wait to see if she outgrows her allergies.

For the next eight years Lexi's parents followed the plan by managing her diet well at home and staying on the lookout for any signs of allergic reactions. But, like many parents of highly allergic children, they also worried constantly about her inadvertently ingesting an allergic substance at birthday parties or school. Looking for some relief, they learned about pediatric allergist **Robert Wood**'s food allergy research in which he exposes a child's immune system to small doses of the culprit food, eventually retraining the body to accept the food as a normal, non-harmful substance. Wood, chief of the Division of Pediatric Allergy and Immunology at the Children's Center, had already conducted oral immunotherapy studies among children with milk allergy with promising results, and more recently with egg-allergic children.

"Children went from having serious allergic reactions after a morsel of cake to consuming eggs with minimal or no symptoms, and that, in and of itself, can give parents invaluable peace of mind," says Wood of his most recent findings (*The New England Journal of Medicine*, July 19, 2012).

Indeed, more than a quarter of the patients in the trial had complete long-term elimination of egg-related allergic reactions—the holy grail of allergy therapy. Yet, even those who didn't lose their allergies became better at tolerating higher doses of egg with only mild or no symptoms. A higher threshold of tolerance, Wood says, is an important clinical goal because it offers protection against serious allergic reactions from accidental or incidental exposures, some of which can be life-threatening.

Next on the horizon: A series of oral-immunotherapy trials for young children with peanut allergies, more egg therapy studies and the world's first oral-immunotherapy study for patients with wheat allergies.

"If you're the parent of a highly allergic child," says Lexi's mom, Michele Rosa, "it makes a huge difference to have someone with Dr. Wood's expertise." ■

AT CME

Pediatrics for the Practitioner

For the latest treatments for celiac disease, headaches and hypertension, among other conditions, attend this conference at Johns Hopkins Sept. 19–20. For more information, call 410-502-9634.

At the table during their monthly teleconference call, from left to right, Hopkins Children's Center nurse practitioner Sarah Doerrer, dietician Zahava Turner, and pediatric neurologist Eric Kossoff, consult with their counterparts at All Children's Hospital.

A Ketogenic Collaboration

There's no trick to treating epileptic seizures—just a lot of experience and a comprehensive approach in evaluating and managing these complex disorders in children. Johns Hopkins Children's Center in Baltimore and All Children's Hospital (ACH) in St. Petersburg, Fla., a Johns Hopkins Medicine member hospital, have that and more. Both hospitals have rich histories in successfully treating intractable seizures—those that do not respond well to medicine and surgery—with the ketogenic diet. So, the thought occurred to them as ACH and Hopkins were merging in 2010, why not collaborate and create a virtual center of excellence for ketogenic diet patients?

"We saw this as an opportunity to collaborate and produce a powerful armamentarium in treating seizures," says pediatric epileptologist **Steven Parrish Winesett**, who heads ACH's Pediatric Epilepsy Program. "Hopkins is known throughout the world as the leader in the ketogenic diet, so it's very comforting to have a partner like that go over the kinds of cases we deal with in which patients have multiple other problems."

"The more minds, the better in treating these complex disorders in children," says pediatric neurologist **Eric Kossoff**, who directs the Hopkins Ketogenic Diet Center.

How do they consult 1,000 miles apart? Kossoff and Winesett periodically attend each other's clinics but the main vehicle of their collaboration is their monthly teleconference in which they share their more complex cases and clinical insights via digital audio-video connections. This collaboration is more than doctor-to-doctor as dieticians and nurse practitioners who specialize in helping patients manage the ketogenic diet participate, too. Adherence to the high-fat, low-carbohydrate diet, they note, is one of the biggest challenges.

"Working with Hopkins dietician **Zahava Turner** each month, we're able to better tweak the diet for patients who are really difficult." says ACH dietician **Stacey Bessone**.

Kossoff and Winesett note that joint educational activities like case conferences and Grand Rounds presentations, as well as research collaborations, are in store, too.

"We're integrating our patient databases, too, so we'll see a lot of joint research coming down the road," says Winesett. "We've started a beautiful relationship." ■

In addition to ketogenic diet and nutritional counseling, the comprehensive Pediatric Epilepsy Program at ACH offers a full spectrum of services, including an inpatient Seizure Monitoring Unit with video EEG, genetic and metabolic testing, vagal nerve stimulation, and epilepsy surgery. For more information, call 727-767-8181. Johns Hopkins Children's Center is known as the premier center in the world for clinical and research expertise regarding the ketogenic diet. For more information, call 410-955-4259.

Research Briefs

Needle-Free Relief for Allergies

Allergy shots are commonly used to treat children with severe environmental allergies and asthma, but under-the-tongue drops may offer yet another beneficial—and stick-free—option for pediatric allergy sufferers, according to a Johns Hopkins Children's Center review of existing scientific evidence. The new research, which comes on the heels of another Hopkins study showing that oral drops provide a safe and effective alternative for adult allergy sufferers, is an analysis of 34 previously published clinical trials and suggests that both drops and injections work well in alleviating the bothersome symptoms of allergic rhinitis and asthma in children (*Pediatrics*, May 6, 2013). However, under-the-tongue drops are not approved for use by the U.S. Food and Drug Administration and are only offered off label by some physicians. ■

Estrogen Fuels Autoimmune Liver Damage

A life-threatening condition that often requires transplantation and accounts for half of all acute liver failures, autoimmune hepatitis is often precipitated by certain anesthetics and antibiotics. Researchers say these drugs contain tiny molecules called haptens that ever so slightly change normal liver proteins, causing the body to mistake its own liver cells for foreign invaders and to attack them. The phenomenon disproportionately occurs in women, even when they take the same drugs at the same doses as men. Results of a new Hopkins Children's Center study in mice, described in the April issue of the journal *PLoS One*, reveal that estrogen and a signaling molecule called interleukin-6 collude to form a powerful duo that leads to immune cell misconduct and fuels autoimmune liver damage. The findings, the research team says, also suggest therapeutic strategies to curb damage in people who develop drug-induced liver inflammation. "Our study," says pediatric anesthesiologist and critical care expert **Dolores Njoku**, "shows that estrogen is not alone in its mischief but is working with an accomplice to set off a cascade of events that leads to immune cell dysregulation and culminates in liver damage." ■

Modifying Disease for CF Patients

The way pulmonologist **Michael Boyle** frames the therapeutic picture for cystic fibrosis, great advances have been made in reducing the risk of mucus buildup and potentially lethal lung infections, improving survival that is now approaching 40 years. But to actually prevent such symptoms and raise the survival ceiling significantly higher, stresses Boyle, researchers need to develop therapies that alter the pathogenesis of the disease at its very beginnings.

"In order to make a more significant change, we're going to have to treat the underlying causes of cystic fibrosis," Boyle says. "The next generation of medicines is going to do exactly that."

These so-called "disease-modifying drugs," Boyle explains, target the defective chloride channel that lines the lungs—defective because CF patients have certain mutations in the CFTR protein, or cystic fibrosis transmembrane conductance regulator, that do not allow it to do its job of balancing salt and water in the channel. The result is too much salt and not enough water passes into the cells, causing the buildup of dry mucus in the lungs that makes CF patients vulnerable to infections. DeltaF508, the most common mutation in CF—affecting 90 percent of patients—prevents the protein from reaching the surface of the channel, where it can activate or fire. But a new Vertex Pharmaceutical compound, VX770, the first FDA-approved disease-modifying medication for CF, says Boyle, has been shown to help propel the CFTR protein to the surface with positive results.

"This corrector compound helps the protein fold right so that it can make it through the quality control mechanism of the cell up to the surface," Boyle says. "VX770 has been shown in several studies to dramatically improve lung function, prevent people from getting sick as often, and help them gain weight—all the things you want."

Disease modifying compounds, says pulmonologist Michael Boyle, bind with the CFTR protein on the cell membrane, open it up and release chloride to restore normal salt and water balance.

However, Boyle adds, this personalized medicine is based on genotype and only works for about 4 percent of patients. Casting a wider net, Boyle is targeting another mutation, R117H, which allows the protein to make it to the channel surface but, once there, is unable to activate. An answer may come with another Vertex compound under development, VX809, which is designed to open the protein and rev it up so it can fire. Boyle is leading a phase 3 combination therapy trial in which VX809 is being used in combination with VX770 against the mutation.

"The ideal thing is to put those two together to get the protein right where we need it and turn it on to its maximum effect," says Boyle, citing an earlier phase 2 study in which lung function improved significantly in half the patients.

Next steps, concludes Boyle, include studying other combinations of channel correctors to maximize the effect of VX770.

"It would be a mistake to say VX770 is a cure," stresses Boyle. "But the way we find a cure is by bunching all these modifiers together to make them work even better and improve their effect on patients."" ■

Bridging the Research Gap

Like many subspecialists, pediatric gastroenterologist **Ian Liebowitz** sees too big a gulf between academic research and clinical practice.

"In general, there's too long a lag between research discoveries and pediatricians incorporating those findings into community practice," says Liebowitz, director of pediatric gastroenterology at Inova Fairfax Hospital. "Many questions that occur in clinical settings do not get answered."

Kathy Schwarz, director of the Pediatric Liver Center at Johns Hopkins, couldn't agree more. That's why both she and Liebowitz recently developed a collaborative research model designed to accelerate translational research for children with liver disease who don't have easy access to a pediatric liver center and clinical trials.

How does it work? Schwarz periodically sees patients at Inova Fairfax's pediatric liver clinic in Rockville, Md., and consults with Liebowitz and his staff regarding treatment and clinical trials that may enhance patients' care. Under the agreement, in which Inova Fairfax is now a member of the Johns Hopkins Clinical Research Network, Liebowitz and Inova Fairfax pediatric gastroenterologist **Peter Lee** may enroll patients in Hopkins Children's Center natural history studies. Also, Schwarz may enroll any patients in clinical trials within these studies.

From left to right, pediatric gastroenterologists Peter Lee, Kathy Schwarz and Ian Liebowitz at Inova Fairfax.

"There's a mutual benefit because we fulfill their desire to have their group of busy private practitioners more involved in clinical research," Schwarz says, "and they help us expand the number of patients we can serve with these studies." ■

Interview: Heather Wade, M.D.

Five years out of residency, this Baltimore pediatrician reflects on the transition to private practice.

Does residency prepare you for community practice?

Yes, in the sense that once again you're multitasking, dealing with a wide variety of issues, and diagnosing and treating diseases. But practicing in a hospital or a residents' clinic is not representative of the business of medicine and the labyrinth of insurance issues you face in the community. In the hospital you order a test and it gets done—here you sometimes keep your fingers crossed that the patient gets to where he needs to go.

Other transition issues?

Managing staff, having fewer resources, continuing medical education and the ever-looming need to keep reading, reading and reading. You must pace yourself and decide what is most helpful and then disseminate it among staff.

Did you bring anything else with you from residency?

During residency I was introduced to the Reach Out and Read program, which I wanted to continue in practice. The program struck me as an effective way to guide families in preparing their children for school and as a way to gauge the family's literacy.

What attracted you to Dundalk Pediatrics?

Patients and their families are quite diverse in terms of education, socio-economics and race, so you get a little bit of everything. Medically fragile and complicated patients are often referred to us for primary care due to our ties to Johns Hopkins.

How do you manage those issues?

As a medical home we're addressing the growing need for holistic treatment of the more chronic conditions. So we treat the medical problems but also focus on prevention and provide a lot of health education. As we learn more about the origins and genetics of disease, we're developing more early interventions for conditions like diabetes and heart disease.

Do you have enough time for those patients?

Each provider sees about 20 patients each day. We try not to overschedule so that we have adequate time to meet the needs of our families, extract concerns from adolescents and do behavioral counseling and relationship building.

What personal attributes do you see important in practice?

It's really important to listen with a level of concern and passion that allows parents to feel they have legitimate concerns. Also, you have to be able to see the big picture. Children live in the context of the family and can't make decisions about their health care—so you're really taking care of the whole family.

Do you see technology influencing practice?

The transition to electronic patient records has been difficult—there's always a learning curve and some grumbling in the ranks when change occurs—but we're more informed each time we see the patient. Technology has also enhanced our communication with specialists.

How about families' Internet access to medical information?

Families are coming up with their own diagnoses and treatment plans, and it's a very difficult process of delicately helping them filter the information. On the other hand, technology opens the door for them to be better partners in care. That's how I see my role—we're educators and caretakers, treating children and helping parents navigate the health care system, school system and social services. The doctor-patient relationship has morphed from a paternalistic style into a partnership.

The Reach Out and Read program, Wade notes, struck her as an effective way to both help parents prepare their children for school and gauge the family's literacy.

How would you describe the stress level in practice today?

There's always stress. In pediatrics as in most fields, there are expectations to do more in less time and with fewer resources, which forces you to be creative. Every week another hot issue comes out of the AAP, like new dangers of social networking sites. With cyber bullying the rumor mill takes on a whole new life—now it's broadcast to the entire world.

Are the rewards different in practice?

The rewards are probably the same as they were in residency, and hopefully that's something that doesn't change. The reward is being invested in children's lives and contributing to healthier, happier successful families. That's certainly why I do this. ■

A New Headache Center

Headaches are the most frequent reason for referrals to pediatric neurologists, yet very few specialize in this condition. Filling that void are **Christopher Oakley** and his physician assistant, **Candie Marchand**, who recently started Johns Hopkins' Pediatric Headache Clinic, one of the few such centers in the country.

While researchers are working toward gaining a better understanding of headaches, it's still unclear what causes them, and there is no cure—only ways to manage the pain and prevent onset. Working toward that goal, Oakley and Marchand use a three-pronged approach. First they help patients attain a healthy lifestyle through good hydration, exercise, a healthy diet and sufficient rest, to help prevent headaches before they start. Next, based on each patient's lifestyle, they suggest some alternative therapies, such as physical therapy, meditation, biofeedback and behavioral therapy.

"There's also good evidence that some supplements have benefits," Oakley says. For example, some of his patients take magnesium, vitamin B2, coenzyme Q10, feverfew and butterbur, all shown to lessen headaches in clinical trials.

Finally, if these approaches don't significantly reduce the number and severity of a patient's headaches, Oakley and Marchand prescribe preventive drugs for daily use and abortive drugs for acute headaches.

With a patient, pediatric neurologist Christopher Oakley in Hopkins' new headache clinic.

"I stress to patients and their families that medicines are not a cure. Our best hope is to decrease the headache frequency and severity," he says. "If we decrease their headaches by 50 percent, that's a success." ■

For more information, call 410-955-4259

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A Community Rotation *continued from page 1*

while at Hopkins many new inpatients come with a plan of action from the subspecialist, at Saint Agnes the residents take initial ownership of the plan.

"The residents have the first say and make an assessment plan of what they think is going on and what they want to do," says Hofert. "That's the neat thing about being here and being able to run the show, although they still run their plans by the supervising attending."

Hopkins pediatric interns also spend one month in the well-baby nursery attending deliveries, seeing newborns, counseling new mothers and working side-by-side with community pediatricians who serve as attendings for about half of the newborns. Residents in the inpatient pediatric unit connect with community pediatricians, too.

"You're constantly getting ahold of the community pediatricians about their patients because they own the patients and have more of a role in their hospital care. At Hopkins a lot of the patients are owned by the subspecialists," says Balighian. "Here residents see the conditions community pediatricians treat, the difficulties they face."

During the rotation, these young leaders are taught to be teachers, too.

"Instead of answering questions, you're turning it around and asking 'What do you think? What would you like to do?'" says Hofert. "As a second year you're inclined to give the answers, but here you have to learn the skill of making the learner come up with the answers. It's the first step in becoming a good teacher."

Another step, says Burke, is for residents to look at their role models for teaching.

"I always looked up to the teachers I had here at Saint Agnes, who were very dedicated in going back to the basics, including asking more questions in history, doing a better job in physical exam and relying less on lab data and imaging," says Hofert. "That really resonated with me as something I'd like to pass on to the interns and residents here."

The rotating residents teach the more experienced staff, too.

"I learn a lot from the residents just by working with them, by hearing their questions and having to respond to their questions," says Burke. "I like watching them mature from internship through second year. It's neat to see how they evolve." ■