



**Weill Cornell  
Medicine**

# THE ART AND SCIENCE OF PEDIATRICS

VOLUME 13, DECEMBER 2015



**PEDIATRIC INTEREST GROUP  
WEILL CORNELL MEDICAL COLLEGE**

December 2015

Dear Weill Cornell Medicine Students and Faculty:

One measure of the quality and success of a special event lies in the support it generates in subsequent years. The reviews of all of previous Pediatric Medical Student Research Days have been overwhelmingly positive. All in attendance at these events agree they are a tradition worth continuing.

On behalf of the Department of Pediatrics and the Weill Cornell Medical Student Pediatric Interest Group, it is a pleasure for me to welcome you to the Thirteenth Annual Pediatric Research Day. In addition to medical student research and scholarly project abstracts, this year's Journal, "The Art and Science of Pediatrics," features interviews with faculty and community service opportunities. The work presented in this journal and displayed at Pediatric Research Day is the product of a wonderful collaboration between our medical students and faculty committed to developing the next generation of pediatric scientists. What makes this work even more special is that our students accomplished this work in spite of the tremendous demands placed on their time by medical school. We believe this exposure to research early in one's medical career is an essential first step not only in launching a successful career in investigation but also in establishing a foundation for lifelong learning for those who choose to pursue clinical medicine.

As Chairman of the Department of Pediatrics, I congratulate and thank the students and their faculty mentors on the success of their research efforts, and acknowledge the strong leadership of the Pediatric Interest Group: Amanda Garfinkel, Sydney Ariagno, and Joshua Adjei, and their advisors, Drs. Thanakorn Jirasevijinda and Susanna Cunningham-Rundles, on organizing and continuing this important pediatric program.

Sincerely,

A handwritten signature in black ink that reads "Gerald M. Loughlin". The signature is written in a cursive, flowing style.

Gerald M. Loughlin, M.D., M.S.

Nancy C. Paduano Professor and Chairman

Department of Pediatrics

Weill Cornell Medicine

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# STUDENT WRITING

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FACULTY INTERVIEWS, POEM, AND ESSAYS

## INTERVIEW WITH DR. ALAN GROVES

*Donovan White, Weill Cornell Medical College MD Student, Entering Class of 2015*

“Work hard, play hard. Both things should make you happy in equal measure.” This is the first piece of advice that Dr. Alan Groves wants to share with medical students at WCMC. Dr. Groves, a member of the Neonatal-Perinatal faculty at Weill Cornell Medicine, believes in having a good “life-work, not work-life” balance in his own life as well. I sat down with Dr. Groves to discuss his work, but came away learning the joys of his life.

*What inspired you to pursue a career in neonatology and in academic medicine?*

“The neonatology portion is very straightforward. In the UK equivalent of residency, I was working on a busy neonatal unit with a lot of throughput and a lot of sick babies. The striking thing was that you could take a baby that was very sick and make them well quickly. The moment that crystalized it for me was being in a delivery where a child came out not breathing and with no heart rate, but with a timely intubation and correct application of resuscitation, that child went home three days later completely fine. That, for me, is more rewarding and valuable than anything else. Another component is the acuity with which the recovery happens. This is true throughout all pediatrics and not just neonatology. Children can get sick really quickly but they can also get well really quickly.”

“The reason to go into the academic side is paradoxically the opposite. There are some times when we can heal a child quickly, but it is also very frustrating when we are confronted with a child that cannot be quickly healed. For example, we have found it very difficult to know how to support the heart of a newborn baby if the child is unwell.” As he further explained, it is hard to know what medications to give, what blood pressure to target, and what monitoring techniques to use. “It is that frustration with the inadequacy of our current approach that I think drives many people into research. The driving force is that it is not okay that we are doing it this way.”

The big question that Dr. Groves wants to understand is that of how to manage NICU patients’ cardiac health without reducing blood flow to the brain. “If we give a baby a medication like dopamine or epinephrine, we know it makes the heart pump more strongly, but we also know it makes the heart constrict the blood vessels. The heart pumping stronger should increase the blood flow to the brain, but the constricting of the blood vessels can reduce the blood flow to the brain. I do not know when I am giving a child a treatment if I am making the blood flow to the brain better or worse and that is not ok.”

These research interests were a critical factor in bringing Dr. Groves to Cornell. “I came to Cornell through the support of Jeff Perlman, who is the chief of our neonatal division and has been looking at cerebral blood pressure for 30 years. I was quoting his work when I did my thesis 15 years ago and even before that. That length of history and interest in this is really vital.” He adds, “I came here because I believe the group at Cornell has the drive and focus to really make a difference in the management of newborn hemodynamics to help protect the brain.”

*Did you do research as a medical student?*

“I did two different, extremely rewarding research projects in medical school. I am really keen to support other medical students in doing it. The first was in Edinburgh where I was looking at intracellular iron concentrations in an *in vitro* rat heart model. One of the nice things about research is that it is a very portable skill. After a year doing that, I was able to get a lab tech position in Sydney, Australia. It is certainly nice to see if you have a taste for research. It is always nice to have variety but I do not think you should spend all your time in either research or clinical care. I feel most people in medicine enjoy the variety that comes with the job.”

Although Dr. Groves feels research is important during medical school, he emphasizes that even medical students need a life-work balance.

“There needs to be protected time for research and, with the new areas of concentrations, there is. I think research produces transferable skills, but there is a life-work balance that must be maintained. I specifically say life-work balance other than work-life balance because I believe the life comes first. Those of us fortunate enough to get to medical school should make sure we are happy and satisfied in every component of our lives. It is about work making you happy and life making you happy and those two things not getting in each other’s way. I think people in our position have the ability to do that. So when you look for a research area, find something that you actually want to do and are excited about.”

Dr. Groves goes on to say that finding balance is about finding something you love and someone you love. “For most of us, the someone-you-love is your partner. I look forward to coming into work everyday and coming home to see my wife every night. I think if you can do those two things, you might get burned out or depressed sometimes but overall you are in a pretty good state.”

*I’ve been told that as a physician that it is difficult to be truly successful in research, clinic, and in personal business. Do you believe that success in all three is possible?*

“I don’t accept the premise of the question. I think you can be effective in all areas. It is a question that all clinician-scientists repeatedly ask themselves, and I spent many years asking myself that question. I think you can make sure that you set up an infrastructure that makes each aspect a success. For example, if you want to spend a lot of time in research, to make sure your clinical work does not suffer, I believe you should invest in a team of people that can run many roles so you do not have to cover all positions. I could definitely do more as a clinician if I do not do the research, but I believe the clinical portion of my work is better because I do the research. Teams depend on the strengths of the individuals within the team. If you have a well constructed clinical and research team than the balance works very well and you can get the best of both worlds.”

## INTERVIEW WITH DR. JOY HOWELL

*Daniel Kramer, Weill Cornell Medical College MD/PhD Student, Entering Class of 2015*

Joy Howell, MD, is an associate professor of clinical pediatrics within the Department of Pediatrics' Division of Critical Care Medicine. Dr. Howell also serves as the director of the Pediatrics Critical Care Medicine fellowship program.

Born and raised in the Bronx, Dr. Howell spent her childhood aspiring to work in medicine, teaching, or law enforcement. Though she had little exposure to medicine throughout her childhood, babysitting jobs and individual exposures to the world of medicine came together to drive her desire to become a pediatrician. Dr. Howell stated, "...caring for young children in one way or another was always something that felt easy to me."

After graduating high school, Dr. Howell began a seven-year, BS/MD program based at City College and the Sophie Davis School of Biomedical Education. During her time in this program, Dr. Howell volunteered in the injury prevention program at Harlem Hospital and identified the program's director, Dr. Barbara Barlow, as a tremendous mentor and role model. Dr. Barlow, a preeminent pediatric surgeon, had started the Harlem Hospital program because, as Dr. Howell said, Barlow was "honestly frustrated with the number of bullets she was pulling out of children." Observing Dr. Barlow's commitment to this program, alongside her extensive research and public health efforts towards understanding and preventing pediatric gunshot wounds, Dr. Howell aspired to be like her mentor in persona and profession. She considered following Dr. Barlow's steps into a career in pediatric surgery, but found herself most drawn to pediatric critical care, a field that she felt would give her the opportunity to make decisions in the hospital that would immediately benefit children in potentially dire straits.

After completing a residency in pediatrics at Children's Hospital of Philadelphia/University of Pennsylvania Perelman School of Medicine, Dr. Howell came to NYP-WCMC for a pediatric critical care fellowship program, and she has been a dedicated member of the NYP Pediatrics faculty ever since.

Dr. Howell began her career at Weill Cornell based in the Queens branch of New York Hospital (prior to the merger with Presbyterian Hospital). In this position, straight from fellowship, she was the site director for a small, 5-bed PICU. After becoming the Pediatric Critical Care fellowship director, Dr. Howell enjoyed interacting with so many fellows at once and being responsible for their education. She said, "the opportunity to engage with fellows on service at the bedside, to have conversations one-on-one with how their fellowship experience is progressing as a whole, overseeing the growth and development of the fellows in research; all of those are aspects of the role that I find enjoyable." Dr. Howell emphasizes her realization that "my impact is not limited to situations where the child does well and lives happily ever after, but that impact can be very powerful even when a child doesn't do well and succumbs to illness. That's an important lesson that parents have taught me; there are parents [whose children passed away] who write me periodically years later." These families send Dr. Howell their gratitude for all her energy and care, even when there was no treatment to be given. She recounts a case of a girl with extremely advanced illness whose parents elected to withdraw care, and her parents periodically write to Dr. Howell describing the growth of the girl's twin brother.

Now an associate attending physician at NYP/Weill Cornell's Komansky Center for Children's Health and a faculty member at Weill Cornell Medical College, Dr. Howell has continued to pursue this tremendous passion for teaching, and she fills many teaching roles alongside her responsibilities in caring for patients. Working closely with medical students, residents, and fellows, she lights up when she describes getting to watch her trainees develop their confidence and abilities in patient care. She particularly enjoys teaching at the bedside, and she highlights the great satisfaction she feels when "you can see someone kind of 'get it' and then begin to take steps on their own. She also enjoys working with medical students in the pre-clinical setting, serving as a faculty tutor in ethics groups and as a group mentor for the LEAP program.

Before leaving Dr. Howell's office, I noticed a photo hanging near my chair, underneath the photo of the little girl's twin brother. The photo shows Dr. Howell's face among a small group, with the underhanging title of "Physician of the Year." In 2008, Dr. Howell was one of a handful of physicians from across the NYPH system selected for this award. The award is sponsored by the Department of Nursing, and requires nominations and letters of recommendation from nurses who the honored physicians regularly work with. Dr. Howell was proud of this award, but in the spirit of her great modesty was prouder still of working well with a hospital staff she thinks so highly of. Looking back on the award, Dr. Howell said, "I consider it no small honor."



## INTERVIEW WITH DR. HAVIVA VELER

*Brandon Sumida, Weill Cornell Medical College MD Student, Class of 2019*

Dr. Haviva Veler, one of Weill Cornell's experts in sleep and pulmonary medicine, was so sure she was destined for pediatrics that she adamantly foretold this destiny in her high school yearbook. Growing up in Israel, she worked with kids in several capacities; she served as a scout (what she describes as Israel's co-ed Boy Scouts/Girl Scouts) and as a tour guide in the Israeli army, providing nature education and enrichment to populations on the border with Lebanon and Egypt. Flash forward to the present; she is a warm and charming pediatrician wearing many hats as the Director for the Weill Cornell Pediatric Sleep Center and an Associate Professor of Clinical Pediatrics at WCMC.

Relocating from Israel to practice in the U.S. was a family decision for Dr. Veler. Her husband came to pursue his PhD and, after finishing medical school at Technion Institute of Technology, School of Medicine in Haifa, she followed to complete her internship and residency at Maimonides' Infant and Children's Hospital in nearby Brooklyn. While it is hard to be away from all of her family in Israel—particularly for Dr. Veler's 12 year-old daughter—she feels very at home in the American medical system. In the U.S., “the institutions are there, the support system is there, the ancillary stuff is there. It makes it easier to practice medicine.”

In her time in the U.S., Dr. Veler has made a tremendous impact in the fields of pediatric pulmonology and sleep medicine. After directing the Pulmonary Function Test Laboratory at the Children's Hospital of Montefiore, she came to WCMC five years ago to help establish the Weill Cornell Pediatric Sleep Center. She says, “We really started the center from scratch—from finding the space to choosing the color of the walls, purchasing equipment, and training the people.” Her vision gave rise to facilities including sleep labs, an insomnia clinic, and spaces for patients using mechanical devices like CPAP (continuous positive airway pressure) ventilation.

Dr. Veler said she has a lot of fun working with pediatrics patients all day. She finds pleasure both in the lack of formality and in the opportunities to just sit on the floor and play with patients. She states she often feels like a detective; “kids don't always tell you what they have,” she says. “In adult medicine it's much more straightforward. A patient comes in and complains of chest pain or abdominal pain. When children come in, sometimes their speech is not there yet in the young ones. In the older ones, they are not always able to localize where the problem is.” As Dr. Veler describes it, the practice of pediatrics is not necessarily different from other specialties in that you still “collect data, ask a lot of questions, and put things together,” but having to “dig in more” adds a level of complexity that she thoroughly enjoys.

Speaking toward her passion for pulmonology, Dr. Veler articulates, “even though you deal with the lungs, the patients usually have multiple problems—[for example] neuromuscular weakness, cardiac disease, neurological disease.” As opposed to some subspecialties where you fall into a very specific niche, with pulmonology “you continue to look at the patient as a whole.” Furthermore, she likes that she gets to follow many of her patients throughout their lives, watching in awe as they cope with technology dependencies like requiring mechanical ventilation to breathe. While this is difficult emotionally, she assures it is “very rewarding.”

Touching on her work in sleep medicine, she believes her field is “awesome” and that it touches everyone; “if the children can't sleep,” she says, “the parents can't sleep.” Without intervention, she notes, many of her patients could very well go on for months and years not getting enough sleep, falling asleep in school, and suffering the various consequences of not having enough energy as children. Luckily much of this is changing; Dr. Veler has contributed to many community outreach efforts, in partnership with the American Academy of Sleep Medicine, that have served to raise awareness of the importance of sleep hygiene in children and to educate parents on possible sleep problems that can affect children.

Dr. Veler describes many different skills and personality traits that are important for aspiring pediatricians. “Of course you need the interpersonal skills, [being able to] deal with patients and family, communicating an

environment of safety.” Often times, she says, patients care less about your knowledge and more about receiving empathy, comfort, and trust from the physician. “You have to be compassionate, let them express themselves, and for the first five minutes keep your mouth shut and just listen.” On the professional side, “you want to be cutting edge, keep up with the professional literature, know all the new things out there.” In an age where patients can search everything and are very knowledgeable, “you really have to be up to date.”

At Dr. Veler’s stage of practicing medicine, her main goal, besides delivering the best medical care, is to innovate and create new resources for patients at Cornell. Currently, she is particularly focused on developing noninvasive daytime studies to predict sleep apnea. Sleep studies, the “gold standard of diagnosing sleep apnea,” are not available everywhere and very expensive. Dr. Veler is in the midst of investigating whether specific lung function tests that measure upper airway resistance can serve as diagnostic markers. She is also involved in efforts to advance the use of sleep study guidance in mandibular advancement surgery for children with craniofacial abnormalities and in efforts to develop “smart” baby monitors that can do more than passively watch and listen (like alerting for a blanket over a baby’s head).

When asked what advice she has for medical students, Dr. Veler stressed the importance of paying attention to details when working with patients. “Sometimes you put the patient in a box,” she cautions, “but you always have to look at the differential diagnosis.” On a different note, as a sleep physician, Dr. Veler strongly advises students to get as much sleep as possible. Most importantly, she says: “My advice would be to stop every few months and figure out: What is my passion? Do I enjoy seeing patients or do I enjoy doing research? Do I enjoy being a pediatrician or do I want more than that? Try not to be discouraged. If you have an idea in your head and you move forward with it, you can make it happen.”

The Pediatrics Interest Group and the WCMC community sincerely thank Dr. Veler for her time in giving this interview.

## **On Building Intuition: Clinical Sessions with Dr. Ilya Bialik**

*Ranjodh Singh, Weill Cornell Medical College MD Student, Class of 2017*

We enter a pediatric patient's room. A 6-year-old lively girl is playing with her parents. Dr. Bialik immediately places the patient's favorite stuffed animal on his shoulder and joins the girl's playtime. He quickly listens to her lungs, turns to the parents and gives them an update. He then turns to us— me and two other med students—and asks us to listen to her lungs. We take turns listening, trying to discern the quality of the breath sounds in between the patient's talking. I try to silence my thoughts and focus all my energy on listening. I hear breath sounds, but can't match them with inspiration or expiration. It's difficult. We step outside and Dr. Bialik asks us to synthesize and present what we heard. I fumble with words to describe the sounds, but Dr. Bialik encourages me and provides me with some needed vocabulary and structure. Next patient, same process—however, this time listening to and describing the lung sounds is a bit easier. Next patient, same process, and again a bit easier. After seeing all the patients on the floor and listening to everyone's lungs, something amazing happens: I can comfortably listen to and describe normal breath sounds, something that definitely wasn't the case at the beginning of that clinical session.

During our weekly clinical sessions with Dr. Bialik, we see all patients on the inpatient service in New York Methodist Hospital Department of Pediatrics. Like the above interaction, Dr. Bialik picks a theme, such as, lung sounds, and we assess these on each patient. For me personally, these sessions have completely changed my approach to patients.

Dr. Bialik is the director of the inpatient pediatric service at New York Methodist Hospital, and is a Clinical Assistant Professor of Pediatrics at Weill Cornell Medical College. He oversees Cornell medical students during their pediatric clerkship at New York Methodist Hospital. Dr. Bialik's motivation for medicine and pediatrics came from his mother. He graduated medical school from Vinnitsa Medical University in Ukraine in 1984 at the top of his class. At that time, those who finished in the top three of the class were allowed to pursue careers in pediatric surgery. Dr. Bialik stayed true to his passion and his mother's influence and pursued pediatrics. After completing training in pediatrics, Dr. Bialik took a leadership position as director of a pediatric inpatient service at a small hospital in Ukraine.

Despite being in a leadership role, Dr. Bialik was unsatisfied with his position and decided to pursue pediatrics in the US. Although he had already been a practicing pediatrician, for licensing and training purposes, he completed a pediatric residency at New York Methodist Hospital. Shortly after finishing his residency, the Chairman of the Department of Pediatrics at New York Methodist Hospital asked Dr. Bialik to lead the inpatient pediatric service as the director, a clear recognition of Dr. Bialik's talent for the profession and passion for pediatrics. After a fellowship at Cornell-NYP, Dr. Bialik assumed his current role as director of the pediatric inpatient service, while also holding an academic post as Clinical Assistant Professor in Weill Cornell Medical College.

Dr. Bialik is an academic physician dedicated to patient care, research and medical education. He takes an active role in resident teaching and research at New York Methodist Hospital. During our morning report, Dr. Bialik often helps residents and medical students discuss interesting cases, pointing out the pertinent details that we should grasp in the patient's history to help sharpen our intuition and clinical reasoning. He also hosts Cornell medical students at New York Methodist Hospital for the pediatric clerkship. I have often received unsolicited praise for Dr. Bialik from former Cornell medical students who completed their pediatric clerkship under his guidance. One student remembers the clinical sessions and can vividly recall some of the many clinical pearls that Dr. Bialik mentioned. Another student told me that she decided to pursue pediatrics as a profession after having an amazing clerkship experience with Dr. Bialik.

I can personally recount numerous clinical teachings from Dr. Bialik that have profoundly changed the way I approach a patient, do a physical exam, and listen to lung and heart sounds. I'll never forget the first thing Dr. Bialik said to me before walking into a patient's room: "Just look at the patient, really just look at them." As medical students, we're taught to take a complete history, and sometimes we let our checklist of questions get in

the way of perhaps the most basic assessment of the patient, that is, how the patient looks to us. Dr. Bialik often mentions that medical training should help us build and sharpen our intuition, and practicing medicine is about putting that intuition into action.

It's tough to pinpoint exactly what makes Dr. Bialik's teaching so effective. Perhaps it's because he encourages us to synthesize and present what we see or hear even when we are not sure. He often says, "If I can do it, you can do it." Or perhaps it's his unwavering trust in us as future doctors, or that he asks us to think critically about the patient's whole presentation, history, labs and imaging. Dr. Bialik reiterates that his job isn't to provide us with the minute details for every pediatric disease, but rather to instill in us a conceptual framework that we can use in all aspects of medicine to become better diagnosticians and physicians.

## **Medical Terminology Lags Behind for Intellectually Disabled**

*Jonathan Reiss, Weill Cornell Medical College MD Student, Class of 2016*

As we came to the patient's bedside in the pediatric intensive care unit, the resident read off the identifying information: "18 year old male with MRCP, cellulitis of the lower extremity" and a long list of other health problems. As a third year medical student, I had never heard the acronym "MRCP" before and later pulled the resident aside to ask him what it meant. He wasn't sure he said, but thought it had something to do with cerebral palsy.

I later learned that the term MRCP as used by our hospital is short for mental retardation cerebral palsy and describes someone with sequelae from both disorders. However, the terms alone do injustice to the complicated history that surrounds the parochial use of them.

A few weeks later, I was casually telling my parents, both with long careers in the New York City education system helping developmentally disabled children, about how the hospital often helped to care for this pediatric population. When I mentioned that they are often characterized as having mental retardation, they were surprised and somewhat appalled. They openly wondered how physicians could describe these children with such an arcane and insulting term.

Intellectual disability, formally mental retardation, is defined as limitations in both adaptive behavior and intellectual functioning that begin during the developmental period or before 18 years of age. There has been less controversy over the definition than how to accurately classify it by name. For decades, the term mental retardation was used despite the pejorative connotations associated with the word 'retarded'. While this term is still fairly common, various organizations including the Special Olympics have pushed to eradicate it entirely. In late 2010, steady pressure from these groups helped to pave the way for Rosa's Law, which replaces the term 'mental retardation' in codified law with 'intellectual disability'. Of greater significance to the medical profession is the 2017 revision of the International Classification of Diseases (ICD) by the World Health Organization. In the next iteration of the ICD, the F70 – F79 codes used for 'mental retardation' will be substituted with 'intellectual disability'.

Interestingly, the term 'mental retardation' actually replaced other, more pejorative terms that were prevalent in legal documents and medical journals prior to the 1960s. Terms such as feeble-mindedness, idiocy, imbecile, and moron were commonplace in the first half of the 20<sup>th</sup> century and were gradually replaced after growing public sentiment helped to abolish these derogatory characterizations from the literature.

The medical profession prides itself on being at the forefront of innovation but, in many respects, it is an industry utterly resistant to change. Even simple modifications to medical lexicon can take decades or longer, often due to the fact that certain terminology exists in an existing cannon of literature. This has been the case for certain diseases with ties to past Nazi physicians, including illnesses formerly known as Reiter's syndrome and Wegener's Granulomatosis, which have since been renamed to Reactive Arthritis and Granulomatosis with Polyangiitis.

Medical school teaches students that one of the most important tasks for a physician is to advocate for and treat all patients equally and to the best of our ability. But when medical lexicon, intentionally or otherwise, denigrates a large group of patients with obvious medical needs, how can we expect our patients and their families to trust us? Given the fact that patient-centered bedside rounding is commonplace in pediatrics, it is easy to foresee a situation where antiquated and pejorative terminology is used to describe a patient's condition in front of family members and parents of patients. As a leading medical institution both in the tri-state region and nationally, we must do a better job of quickly integrating advances not only in technology, but in medical lexicon as well.

# RESEARCH ABSTRACTS

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MEDICAL, GRADUATE, AND MD/ PHD STUDENTS



## Delirium in Hospitalized Children with Cancer: A Pilot Study Exploring Incidence and Associated Risk Factors

Sydney Ariagno<sup>1</sup>, Francesca Thau<sup>2</sup>, David Pritchard<sup>3</sup>, Joanne Chou<sup>3</sup>, Rachel Kobos<sup>3</sup>, Julia Kearney<sup>3</sup>, Bruce Greenwald<sup>1</sup>, Gabrielle Silver<sup>1</sup>, Chani Traube<sup>1</sup>

<sup>1</sup> *Department of Pediatrics, Weill Cornell Medical College,* <sup>2</sup> *Barnard College,* <sup>3</sup> *Department of Pediatrics, Memorial Sloan Kettering Cancer Center, New York, NY*

**Background:** Delirium is acute neurologic dysfunction that arises in the context of major illness or its treatment. Delirium is a prevalent complication in hospitalized adults with cancer and is associated with mortality, morbidity, and increased hospital length of stay (LOS). The prevalence of delirium in children with cancer is not well understood, likely due to the absence of widespread screening. There is no consensus on the incidence of delirium or identification of associated risk factors.

**Objective:** To determine the incidence of delirium in hospitalized children with cancer, related risk factors, and association with hospital LOS.

**Design/Methods:** This is a retrospective study of patients admitted to a pediatric oncology ward over a 3-month period in 2015. Every patient was prospectively screened for delirium daily, as standard of care, using the Cornell Assessment of Pediatric Delirium (CAPD), a validated observational screening tool administered by the child's nurse. Delirium diagnosis was confirmed by the medical team. Data was collected retrospectively from the electronic medical record regarding the patient's daily delirium status, demographics, diagnosis, resuscitation status, and hospital length of stay. Generalized estimating equations were used to analyze factors associated with diagnosis of delirium and association with LOS.

**Results:** Three hundred and twenty consecutive admissions, comprising 187 individual subjects ranging in age from infancy to 21 years old, were included in this analysis. Delirium was diagnosed in 40 of these admissions, for an incidence of 12.5% in this cohort. Risk factors associated with the development of delirium during hospitalization included age <5 (Odds ratio (OR)=2.7 [95%CI: 1.3-5.6, p<0.01], post-operative status (OR 4.0 [95%CI: 1.8-9.2], p<0.01), and patients with a do-not-resuscitate order in place (OR 15.0 [95%CI: 4.5-56.0], p-value <0.01). Delirium diagnosis was linked to increased hospital LOS, with a median LOS for delirious patients of 9 days as compared to 4 days for patients who were not delirious during their hospitalization (p≤0.007)

**Conclusions:** In this single-institution study, delirium is a prevalent complication in children hospitalized with cancer, with clearly identifiable risk factors and a measurable effect on hospital LOS. Multi-institutional prospective studies are warranted to further characterize delirium in this vulnerable population, and identify modifiable risk factors, in order to improve the care we provide to hospitalized children with cancer.

## Reliability and Validity of the Richmond Agitation and Sedation Scale (RASS) in Critically Ill Children

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**Background:** Although there are numerous pediatric tools to assess sedation, there are currently no comprehensive responsiveness scales validated in the pediatric population that include agitation as well as sedation. The RASS is an intuitive observational tool validated in adult populations to assess sedation/agitation. It provides a graded scale from -5 to +4, with negative scores indicating degrees of sedation and positive scores indicating degrees of agitation. The RASS has never been formally validated for pediatric populations, which prevents widespread implementation of this scale in pediatric intensive care units.

**Objective:** To assess interrater reliability and criterion validity of the RASS in pediatric patients.

**Design/Methods:** To evaluate interrater reliability, one researcher and the patient's nurse simultaneously but independently scored the RASS. To evaluate validity, the RASS score was compared to both a Visual Analog Scale (VAS) scored by the patient's nurse, and the University of Michigan Sedation Scale (UMSS), a previously validated children's sedation scale, performed by the researcher. The nurse completed the VAS by drawing a single line on a 10cm scale anchored by "unresponsive" and "combative". The UMSS was used to validate the sedation portion of the RASS only, as it does not include grades of agitation. As there are no other validated tools that assess agitation, the VAS was used for validation.

**Results:** One hundred paired assessments were obtained. Interrater reliability between the nurse's and the researcher's RASS showed excellent agreement, with a weighted kappa statistic of 0.825 ( $p < .0001$ ). In validity testing, the RASS was highly correlated with the nurse's VAS, with a Spearman correlation coefficient of 0.810 ( $p < .0001$ ). The RASS was also highly correlated with the previously validated UMSS for patients with RASS less than or equal to 0 ( $n=84$ ), with a weighted kappa statistic of 0.902 ( $p < .0001$ ).

**Conclusions:** The RASS is a reliable and valid tool for use in critically ill children to evaluate both agitation and sedation. The widespread adoption of the RASS will allow for accurate assessment of pediatric sedation and agitation and improve our ability to conduct research on risk factors, treatments, and outcomes associated with various levels of sedation and agitation.

# Mild Motor Impairment in Very Low Birth Weight (VLBW) Infants is Related to Expressive but not Receptive Language

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**Background:** Children born VLBW may display subtle motor and language difficulties. While infants with motor impairments are also likely to have language impairment, the relationship between motor and language functioning is not known. We hypothesized that severe motor deficits are related to both expressive and receptive language deficits but that mild motor deficits are associated with expressive but not receptive language functioning.

**Objective:** To examine the relationship between gross motor deficit and expressive and receptive language in VLBW infants.

**Design/Methods:** A retrospective chart review of 126 VLBW infants born 2005-2014 with birth weight <1250g and with Bayley Scales of Infant and Toddler Development –III (BSID III) Expressive and Receptive Language Scores and a physical exam at 18±2mo corrected age. Gross motor exam was categorized as normal (NL); mild impairment (MILD): low tone, unstable gait, or clumsiness; or moderate-severe impairment (MOD-SEV): no independent walking.

**Results:** NL exam was seen in 68 (54%), MILD in 40 (32%), and MOD-SEV in 18 (14%).

Table 1 shows the number (%) of children in each motor group by receptive language score and expressive language score category, using the BSID III score cutoffs of normal ≥85, mild 71-84, and moderate-severe <71.

Table 1.

Rates of Language Delay by Motor Development Group

	Receptive Language			Expressive Language		
Motor Group	Normal	Mild	Moderate-Severe	Normal	Mild	Moderate-Severe
NL	52 (76%)	15 (22%)	1 (2%)	49 (72%)	12 (18%)	7 (10%)
MILD	25 (63%)	9 (22%)	6 (15%)	13 (33%)	18 (45%)	9 (22%)
MOD-SEV	6 (33%)	7 (39%)	5 (28%)	5 (28%)	5 (28%)	8 (44%)

On receptive language scores, children in the NL group differed significantly from MOD-SEV children ( $p=0.002$ ), while the MILD group did not differ significantly from NL or MOD-SEV groups. On expressive language scores, children in the NL group differed significantly from both MILD ( $p=0.036$ ) and MOD-SEV ( $p=0.001$ ) groups, who did not differ significantly from each other.

## Conclusions:

While mild motor impairment was not related to poorer receptive language, it was significantly related to expressive language, which may result from disturbed neuromuscular control of speech mechanism. It remains to be seen whether motor impairment and delays in expressive language will continue to be significantly associated as children age.

## Rapid High Resolution MR Assessment of Intra-Abdominal Fat in Preterm Neonates

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**Background:** Preterm infants at term-equivalent age have a body composition that is markedly different from that of healthy, term-born infants; though preterm infants are lighter and shorter, they accrue higher body fat percentages and may have larger intra-abdominal fat depots.<sup>1-3</sup> Given the link between visceral adiposity and cardiometabolic disease in adults, in conjunction with evidence of heightened cardiometabolic risk profiles in adults born preterm, there is a great need for better methods of studying and monitoring intra-abdominal fat deposition in the preterm population.<sup>4</sup>

**Objective:** This project aimed to show proof of concept that high resolution MR imaging can be used to assess intra-abdominal adiposity in preterm neonates and to drive research into altered body composition in the preterm population.

**Methods:** Our research team partnered with clinical teams on the NYP-WCMC NICU, PICU, and Pediatric Inpatient units to identify patients <1 year old who were scheduled for clinically indicated MR scans. Parents were asked to consider participation in our study, which involved adding up to 15 minutes to the end of their child's clinical scan to perform a series of research sequences. Patients requiring anesthesia for the scan were not eligible to participate, as excess time under anesthesia holds potential risks for patients, and research sequences would be performed only if the infant remained comfortably asleep and settled at the end of the clinical portion of the scan. During this research scan time, high resolution (1mm<sup>3</sup> isotropic) whole body fat and water images were acquired on 6 neonates on a 3.0 Tesla GE MRI scanner using the IDEAL-IQ/LAVA-Flex pulse sequence, which takes just 90 seconds to perform.<sup>5</sup> Quantitative fat fraction maps were created automatically on the scanner, with each voxel given a value of 0-100% fat content. A single observer, blinded to the subjects' gestation, used 3D Slicer (NA-MIC) to label voxels containing >50% fat, calculating total body adiposity, and then to virtually dissect intra-abdominal fat in the perirenal and perispinal regions.

**Results:** Three preterm neonates (median bwt 650g, gestation 24+1 weeks, weight at scan 2080g, corrected gestation 38+5 weeks) and 3 term control infants (3250g, 40 weeks, postnatal day 2) were studied. In our preliminary analysis, preterm subjects had a significantly greater amount of fat tissue surrounding the collecting system (perirenal plus periureteral fat; p=0.04). The group differences in total fat mass and perispinal fat mass were non-significant in this small sample.

**Conclusions:** Preliminary data shows that rapid high resolution MR body composition imaging can be used to assess intra-abdominal adiposity in preterm infants and to demonstrate differential adipose tissue deposition in preterm subjects relative to term controls. This methodology holds great potential to advance our understanding of the altered body composition in preterm neonates and to give rise to a more sophisticated system of growth monitoring and nutritional management of preterm infants in the NICU clinical setting.

<sup>1</sup> Johnson M, et al. Pediatrics 130:e640-9.

<sup>2</sup> Daly-Wolfe, KM, et al. Pediatr Res: Oct 2014: 1-6.

<sup>3</sup> Uthaya S, et al. Pediatr Res;57(2):211-215.

<sup>4</sup> Lewandowski AJ, et al. Circulation 2013; 127(2):197-206.

<sup>5</sup> Yu H, et al. MRM 2008;60:1122-1134.

# Clinical Features of Alloimmune Neutropenia: Composite of 2 Case Series and 39 Case Reports

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**Background:** Alloimmune neutropenia (AIN) is a rare condition resulting from transplacental passage of maternal alloantibodies against paternal human neutrophil antigens (HNA). The resulting neutropenia may persist for months and predisposes neonates to bacterial and fungal infections, in particular sepsis. Despite the danger posed to neonates, little is known about the clinical features of AIN; no reviews incorporating more than 10 cases have comprehensive clinical information. The aim of this summary is to assess clinical data describing cases of AIN.

**Methods:** A Pubmed search was performed for cases of AIN. In addition, a search was performed from the reference lists of all identified articles. Only English language articles describing serologically confirmed cases of AIN were included in our review. Analysis was primarily descriptive. By including case reports, a bias is incorporated to more severe and unusual cases but this was the only approach to obtaining information on AIN cases.

Twenty-seven studies were identified – two case series [Tomicic *Am J Reprod Immunol.* 2014 (15 cases) and van den Tooren-de-Groot *Acta Paediatr.* 2014. (35 cases)] and 25 case reports that described 39 cases of AIN, totaling of 89 cases (Table 1). The two case series relied on antibody testing to identify confirmed cases of AIN whereas the 25 articles described neutropenic neonates that were eventually diagnosed with AIN.

**Results:** Analysis revealed that AIN was first suspected due to an infection or as a part of routine blood work completed for preterm infants. Neonates either presented with no infection (29%), omphalitis (25%) or other infections; sepsis was identified in 14% (only 1 death). The mean gestational age was 35.6-36 weeks and mean birth weight was 2500-2700 grams. The HNA antibodies most commonly identified in AIN were anti-HNA-1b (25%), anti-HNA-1a (16%), and anti-HNA-1c (16%) with anti-HNA-2 (18%) and anti-FcγRIII (11%) next. Differences in course between different anti-HNA antibodies were not identified. Antibiotics were most commonly used in treatment (>65%), most of the time (52%) on their own; G-CSF was used in 11% of cases. Neutropenia resolved within 6 months. In very few cases was information provided on subsequent pregnancies.

Table 1	Comparison of Cases of Alloimmune Neutropenia (AIN)			
	van den Tooren-de Groot et al. 2014 (n = 35)	Tomicic et al. 2014 (n = 15)	Individual Case Reports (n = 39)	Total (n = 89)
Average Birthweight (g)	2776	-	2556.6	
Average Gestational Age (Weeks)	35.6	-	36.0	
Average Absolute Neutrophil Count (/mm <sup>3</sup> )	430	631	197	
<b>HNA Antibodies</b>				
anti-HNA-1a	7	1	4	12 (16%)
anti-HNA-1b	12	-	7	19 (25%)
anti-HNA-1c	2	1	9	12 (16%)
anti-HNA-2	8	3	3	14 (18%)
anti-HNA-3a	1	-	-	1 (1%)
anti-HNA-5a	1	-	2	3 (4%)
anti-Fcγ <sub>3</sub> RIIIb	4	2	3	9 (11%)
anti-HLA	-	4	2	6 (8%)
<b>Treatment</b>				
No Treatment	-	6	3	9 (12%)
Antibiotics	25	7	7	39 (52%)
Antibiotics and IVIG	-	1	-	1 (1%)
Antibiotics and G-CSF	-	1	8	9 (12%)
G-CSF	1	-	-	1 (1%)
Other	-	-	16	16 (21%)
<b>Clinical Data</b>				
No Infection	14	-	9	23 (29%)
UTI	1	-	-	1 (1%)
Omphalitis	6	7	7	20 (25%)
Candida Mucositis	1	-	-	1 (1%)
FUO	6	-	1	7 (8%)
Sepsis	7	2	5	14 (18%)
Other	-	-	12	12 (15%)
Death	0	0	1	1 (1%)
<b>Average Time for Neutropenia to Resolve (Weeks)</b>	-	7.7	9.8	

**Conclusions:** Together, the studies provided information on why neonates were tested for AIN, HNA-antibody target, treatment of infections, weight and age of neonates and the average duration of neutropenia. In comparison to fetal and neonatal disorders hemolytic disease and alloimmune thrombocytopenia, there is still much to be learned about AIN. Analysis of the 89 cases suggests that AIN should be thought of earlier in infected neutropenic neonates, especially those with omphalitis and more consideration given to G-CSF and/or IVIG. The low incidence rate, self-limiting course, and current practice not to routinely obtain CBCs with differentials in neonates all contribute to the low rate of identifying AIN. Furthermore, serologic testing is not rapidly available in most clinical settings. To obtain a better understanding of the clinical features of AIN, a comprehensive prospective study evaluating full clinical data in real time of neonates serologically tested and found to have AIN should be conducted.



# **The Prevalence & Types of Complementary/Alternative Medicine (CAM) used as First Aid for the Pediatric Patients with Burn Injuries.**

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**Background:** CAM is used to treat common acute and chronic conditions in both adults and children. Little has been reported in the literature on CAM use for burn injuries in children. Information on the prevalence and types of CAM used as first aid for pediatric burn patients can help enhance curriculum development for medical providers as well as guide patient education in this area.

**Objectives:** To assess the prevalence and types of CAM used as first aid for pediatric burn injuries, and to correlate them with burn injury characteristic, and patient and caregiver demographics.

**Methods:** A retrospective chart review was used to gather data. Pediatric patients age 0-21 with burn injuries evaluated in the Emergency Department and Inpatient Burn Center at an urban tertiary medical center in 2013 were identified via ICD-9 codes within the Electronic Health Records (EHR). Prevalence and types of CAM were identified as well as burn characteristics, and patient and caregiver demographics.

**Results:** A total of 506 charts were identified, 483 of which met the inclusion criteria and were included in the analysis. The patients consisted of 26% white, 19% African-American, 12% Hispanic, and 9% Asian. About half (51%) of the patients were covered by Medicaid. The mean age was 5.25 years, and 55% were male. The majority sustained scald (69%) and contact (19%) burns. Almost two-thirds (62%) of the charts documented first-aid use prior to seeking medical care. Of those for whom first aid was documented, the majority (60%) used cold water and 26% used more than one type of first-aid. Other conventional first-aid included cold compresses (8%), ice (5%), topical antibiotic cream (14%), over the counter burn cream (8%), or other over the counter creams and ointments (20%). The use of complementary or alternative medicine (CAM) as first-aid was documented in 14% of charts reviewed. Examples of CAM included toothpaste (35%), aloe vera (19%), applied tomato products (15%), and other common food items (35%). Almost 10% used more than one type of CAM. Analysis of how burn characteristics and patient/care giver demographics correlate to CAM use is ongoing.

**Conclusions:** The majority of pediatric patients with burn injuries use some form of first-aid at home before presenting to medical attention, with most reported using cold water, which is recognized as the treatment of choice for minor burns. CAM use was reported at 14%. Of patients using CAM, the most commonly used treatments were household or food items. How CAM use correlates to outcomes may be focus of a future study, but is not a conclusion from ours. Results can be helpful in enhancing training for medical providers and target patient education efforts.

## Addressing Missed Opportunities for Teaching the Pediatric Physical Exam: Student Perception of the Role of Video Podcasts

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**Background:** Medical students lack training in pediatric physical exam (PPE) before the pediatric clerkship (Guiot, 2013). A robust PPE curriculum requires intensive resources including time and personnel. Instructional podcasts are a convenient and effective format to deliver curricular contents in this area. (Orientale, 2008; Schickedanz, 2009). However, student perception of the utility of podcasts for PPE remains unknown.

**Objectives:** To assess 1) how students learn PPE; 2) gaps in existing curriculum on PPE; 3) medical student self-assessment of PPE skills; 4) perceived utility of PPE podcasts.

**Methods:** A mixed-methods design was used to gather data. Third-year pediatric clerks were recruited to complete an anonymous survey and participate in focus groups. Survey and focus group questions assessed self-reported comfort and skills levels in PPE, approaches to learning PPE, gaps in existing PPE curriculum and utility of PPE podcasts. Focus groups were audiotaped and transcribed, then analyzed by two investigators using semi-structured content analysis. Disagreements were resolved by consensus and the list of codes revised in an iterative process.

**Results:** A total of 121 (83%) students completed the survey and 35 participated in focus groups during the 2013-15 academic years. The majority (62%) reported “needs improvement” in their comfort/confidence level with PPE, while 46% reported “needs improvement” in skills level. Most (86%) reported that PPE podcasts would increase their comfort/confidence and skills in PPE. Students cited lack of prior experience, resources, opportunities to practice, and the culture of evaluation as challenges to learning PPE. Students recommended that PPE curriculum include the teaching of approaches to working with children in addition to specific techniques, hands-on bedside teaching, flipped classroom and observation with feedback. Students also recommended that podcasts be short (~5 minutes), each focusing on an age group or organ system, accessible for home use and just-in-time training.

**Conclusions:** Third-year students lack PPE training prior to their clerkship and feel unprepared to perform these skills. Curriculum enhancement should include approaches to working with children and focus on hands-on format. Short, focused and accessible podcasts can play a role in improving level of comfort and skills in this area and be integrated into the curriculum.

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## Treatment Outcomes for Tuberculosis among Adolescents in Port-Au-Prince, Haiti

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**Background:** Haiti has the highest prevalence of tuberculosis (TB) in the Western Hemisphere with 366 cases per 100,000 people. Among them, 3% in the Port-au-Prince area are multi-drug resistant. Despite significant improvements in the treatment success rate since 2010, it has remained steady around 80% for the past few years. To improve care, we investigated when adolescents are lost to follow up during TB treatment at Centres GHESKIO in Port-au-Prince, Haiti.

**Methods:** All cases of TB in Haiti are documented in the National Registries of Tuberculosis Cases. Data for these visits were extracted from the registries for patients between ages 10 to 24 diagnosed with a positive acid-fast bacilli smear (AFB) between 2011 and 2014, with a total of 1,383 cases. After data collection, chi square test was performed for descriptive statistics of our study cohort, and Kaplan Meier Survival Curve was performed to look at the proportion of patients who returned to the clinic for their 2-month visit.

**Results:** Patients were on average 20 years of age; 686 were female (50%). 174 patients were HIV positive. 65% of patients lived in slums within Port-au-Prince. 4% of patients had been previously treated for TB. The mean time from diagnosis to start of treatment was 16 days. TB outcomes included cured or treated, died, abandoned treatment, or failed treatment. Preliminary data analysis shows that 1064 (77%) of patients were cured of TB or successfully completed treatment for TB. 20 patients (1%) died during treatment. 288 (21%) abandoned care, and 11 patients (1%) ultimately failed treatment. HIV negative patients were more successful in finishing treatment or be cured for TB ( $p<.01$ ). Within our sample, age and sex of the patient did not influence overall outcomes. Early Kaplan Meier Survival Curve analysis shows that about 75% of patients, regardless of HIV status, returned for their 2-month visit. Further analysis will continue to expand the Kaplan Meier Survival Curve to show how each population of interest (HIV positive versus negative, female vs male, younger vs older) was able to comply with each of the scheduled visits for continued TB treatment.

**Conclusions and Future Directions:** Our data are consistent with national trends in Haiti for HIV treatment outcomes (80%), but indicate a slightly lower rate (77%). Further analysis must be done to compare the adolescent TB outcomes at GHESKIO to those of adults. Preliminarily, it also appears that adolescents who are co-infected with HIV and tuberculosis are less likely to successfully complete TB treatment than those only infected with tuberculosis. This result is quite surprising, as HIV positive patients were more likely to already be in medical care and were expected to have higher rates of compliance. Further development of the Kaplan Meier Survival Curve will allow us to investigate at what point in treatment HIV positive patients were lost to follow up. Similarly, the development of the curve will allow for possible timing hints as to what the main barriers are for patients to completing treatment

# Association Between Birth via Caesarian Section and Childhood Obesity among High-Risk Populations

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**Background:** Recent studies have shown that the microbiome, the unique compilation of microscopic organisms within each human body, may play a role in determining individual rates of energy harvest, fat storage, and, thus, obesity status. One factor known to contribute to differences in microbiota is the method of delivery at birth, meaning vaginal delivery or delivery via caesarian section. Several recent studies<sup>1,2</sup> have found that being born via caesarean section, as opposed to vaginal delivery, is associated with a significantly higher risk of childhood obesity. However, these studies were comprised largely of subjects of higher socioeconomic status and of white race/ethnicity and thus did not address the question in those populations at greatest risk for childhood obesity: minority groups (e.g., African-Americans and Hispanics) and those of lower socioeconomic status. Only one study to date<sup>3</sup> has looked at the association of birth method and childhood obesity in these high-risk groups, though this study only considered children up to age 7. Our study seeks to understand whether this association exists throughout childhood, from ages 2 through 17, among high-risk groups.

**Methods:** This is a retrospective chart review study of patients in the Pediatric Primary Care clinic of NYP-Weill Cornell. This clinic has an overwhelmingly low socioeconomic status patient population, with 98% of the clinic being covered by Medicaid. Additionally, the vast majority of the patients are of African-American or Hispanic descent. Each record is reviewed for delivery method, BMI percentile, group B strep status/perinatal antibiotic use, breast-feeding duration, age at introduction of solid food, and other pertinent medical and demographic data. The subjects will be divided into two groups based on birth method and analyzed using descriptive statistics and multivariate logistic regression.

**Results:** Currently, we have included 47 subjects in the study (137 total charts reviewed, 90 excluded due to meeting exclusion criteria), with a target total of 340 subjects. Thirty-one of these subjects were born via vaginal delivery, while 16 were delivered via caesarian section. The breakdown by sex thus far is nearly even (23 males, 24 females), and the average age is 5 years old. Once data collection is complete, we will perform analysis on the group as a whole and stratified by age.

**Potential implications:** With the increasing rate of caesarian sections, particularly of elective caesarians, it is critical to understand the potential downstream health effects on the child. An increased risk of obesity in children would be an important factor to consider in any clinical decision-making process regarding birth method, as childhood obesity has significant effects on both immediate and long-term health and well-being.

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<sup>1</sup> Blustein et al. Association of caesarean delivery with child adiposity from age 6 weeks to 15 years. *Int J Obes*. July 2013. 37(7):900-6.

<sup>2</sup> Huh et al. Delivery by caesarean section and risk of obesity in preschool age children: a prospective cohort study. *Arch Dis Child*. July 2012. 97(7):610-6.

<sup>3</sup> Mueller et al. Prenatal exposure to antibiotics, cesarean section and risk of childhood obesity. *Int J Obes*. Nov 2014. 1-6.

## Impact of Religious and Cultural Views on Healthcare Decision Making and Childhood Vaccination

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**Background:** Recent outbreaks of vaccine-preventable diseases are of great concern. Several have occurred in religious enclaves, yet there is limited literature examining the relationship between a family's religious and cultural background and attitudes towards vaccines and healthcare decision-making.

**Objective:** To better understand what factors, including religious and cultural views, impact parental attitudes towards healthcare decision making and vaccination.

**Design/Methods:** We surveyed parents in the well-baby nursery at a large, diverse, academic medical center. We assessed demographics, religious affiliation and observance, general healthcare decision making, and views on vaccines. Data were analyzed using descriptive statistics and Fisher's exact test was used to evaluate the association between religious background and level of observance and attitudes towards healthcare decision making and vaccination.

**Results:** To date, 78/89 parents have participated. 85% of respondents identified with a religious group and 25% attended religious services at least monthly. None cited religious leaders as sources of healthcare information and a large majority reported their religious and cultural beliefs never impact their healthcare decisions (78%), including vaccination decisions (97%). No statistically significant relationship was found between religious observance and attitude towards vaccines ( $p = 0.22$ ). Nearly all parents (99%) cited their physician's recommendations as important or very important in vaccine decision-making, with on-line and media information (45%) and advice from family and friends (36%) also playing a key role. While most respondents planned to vaccinate their children (98%), many still endorsed fears of side effects (43%), including a link between vaccines and autism (4%). Only 70% agreed that vaccine-preventable diseases could cause serious illness or death.

**Conclusion:** Our results suggest that parental religious background and observance may not strongly influence healthcare decision making and attitudes towards vaccines. On the other hand, fears of vaccine side effects are still prevalent and many parents are unaware of the dangers from vaccine-preventable diseases. As almost all respondents ascribe importance to physician advice, this study highlights the key role pediatricians can play in dispelling vaccine myths and promoting vaccination.

## **Efficacy of Intrapartum GBS Chemoprophylaxis with Vancomycin and Clindamycin**

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**Background:** Culture-based screening and antibiotic prophylaxis for women colonized with GBS has significantly decreased the incidence of perinatal GBS infection. Penicillin, ampicillin, or cefazolin given at least 4 hours prior to delivery is the only adequate means of intrapartum prophylaxis according to the AAP. Infants born to penicillin allergic women who receive clindamycin or vancomycin are managed in the same way as infants born to those inadequately treated, resulting in increased screening blood work, vital sign monitoring, and longer hospital stays. No study has validated these practices.

**Objective:** Our primary objective was to compare laboratory and clinical outcomes amongst infants born to GBS+ mothers treated with vancomycin or clindamycin to those inadequately treated prior to delivery. Our secondary objective was to assess GBS resistance patterns.

**Methods:** We conducted a retrospective chart review comparing full term neonates born to GBS+ women who received vancomycin or clindamycin >4 hours prior to delivery to those inadequately prophylaxed at NewYork Presbyterian Hospital from 2007-2015. Included infants were born via vaginal delivery or C-section with labor prior to surgery. Primary outcomes included CBC with I:T and blood culture results, temperature instability, and transfer to the CCN/NICU for concern of clinical sepsis.

**Results:** To date, 379 patients have been analyzed. 319 were inadequately treated and 60 were treated with vancomycin or clindamycin. The groups did not differ significantly by gender, gestational age, birth weight, or maternal age. There was no difference in outcomes between the two groups, including abnormal CBC with I:T (8.5% vs 5.2%; p=0.6), temperature instability (14.8% vs 13.3%; p=0.8) and transfer to the CCN/NICU (15.4% vs 15%; p=0.9). Blood cultures were positive for 3 patients, one of which was positive for GBS. GBS sensitivity testing was performed on 86 isolates, of which 42 (48.8%) were resistant to clindamycin and 0 were resistant to vancomycin.

**Conclusions:** Our findings suggest that infants born to GBS+ mothers treated with vancomycin or clindamycin should receive closer monitoring, as their outcomes match those of inadequately treated infants. Clindamycin resistance is also a concern. Future research must be conducted to determine the effectiveness of clindamycin and vancomycin as prophylaxis for neonatal GBS disease.



# Psychiatric Comorbidities and Substance Use in Young Adults with Dermatologic Conditions

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**Background:** This is a pilot investigation based on the hypothesis that psychiatric symptoms of substance use and body dysmorphia may be co-morbid with dermatologic disorders in young adults (age 18-29 yo) and that this cohort of patients may also report lower quality of life scores. The primary aim of this study is to determine whether young adults with dermatologic conditions report lower quality of life scores, higher rates of mental health comorbidities of body dysmorphia, and also engage in high rates of substance use. Our study will screen for psychiatric symptoms body dysmorphia, along with use of alcohol, tobacco, and recreational drugs. We will also assess quality of life in patients with dermatologic conditions of acne and eczema, and determine whether substance use is associated with lower quality of life measures. The goal will be to assess for psychiatric symptoms and substance use in young adults with dermatologic conditions by administering various questionnaires and screening tools. Patients will be asked to complete rating scales that assess their quality of life (DLQI), psychiatric disorders such as body dysmorphic disorder (BDDQ), and substance use including alcohol, tobacco, and recreational drugs. The control group will consist of subjects who present to the dermatology clinic for total body skin exam, who do not have a dermatologic diagnosis or psychiatric diagnosis or psychiatric history.

**Study Design:** This is a pilot investigation based on the hypothesis that psychiatric symptoms such as body dysmorphia and substance use may be co-morbid with dermatologic disorders (acne and eczema) in young adults (age 18-29 yo) and that this cohort of patients may also report lower quality of life scores. The primary aim of this study is to determine whether young adults with the dermatologic conditions acne and eczema report lower quality of life scores, higher prevalence of mental health illnesses, and also engage in high rates of substance use. Our study will screen for psychiatric symptoms of body dysmorphia, along with use of alcohol, tobacco, and recreational drugs by administering various questionnaires and validated screening tools. Patients who meet the study criteria that present to the Weill Cornell Dermatology outpatient clinic will be asked to complete rating scales that assess their quality of life, and complete validated screening questionnaires for body dysmorphic disorder (BDDQ), dermatology quality of life questionnaire (DLQI), and substance use questionnaires to specify alcohol, tobacco, and recreational drug consumption. These questionnaires were selected based on their validity for detecting the psychiatric conditions in question, their consistency among different subject groups, and they are short enough to complete in the time frame appropriate for a dermatologic visit. These surveys will be conducted at the end of an outpatient visit to patients who meet study eligibility criteria, as determined by the co-investigators, and are willing to participate. We will include a control group that will consist of young adult patients who present to the dermatology clinic for a total body skin exam who do not have a dermatologic diagnosis, pre-existing psychiatric diagnosis or psychiatric history.

**Rationale:** The link between an individual's experience of a dermatologic condition and its psychological effects has been widely studied. Previous studies have reported an association between dermatologic conditions, such as acne vulgaris, and depression and anxiety in both adult and pediatric populations (Perry 2013). This association is important because it suggests that perceived flaws and body image concerns may be associated with dermatologic issues, which in turn could place these individuals at higher risk for psychiatric illness. Such perceived flaw and body image issues, such as body dysmorphic disorder, have been found in up to 14% of dermatology patients (Dyl 2006). The relationship between substance use and other mental illnesses, including body dysmorphic disorder has also been well characterized, with an odds ratio estimated to be 2.7 for substance use disorder in individuals with preexisting mental illness (Reiger 1990). However, current studies have not looked at the relationship between dermatologic conditions and psychiatric conditions such as body dysmorphic disorder and substance use, specifically in young adults. This association is important, as alcohol and tobacco use have been implicated in impaired wound healing (Matthew 2011) and in poor medication treatment compliance (Engler 2013). Both of these factors are crucial in the dermatologic setting, as medication adherence and wound healing factors are paramount to the improvement of dermatologic conditions. Furthermore,

substance use has been found in 49% of patient samples with body dysmorphic disorder (BDD) and report that BDD contributed to their substance use, highlighting the importance of understanding these two psychiatric comorbidities together (Grant 2005). Our study seeks to identify the association between dermatologic issues and psychiatric illness such as body dysmorphia and substance use. A better understanding of this relationship is crucial in order to provide more effective care for the patient via a multi-disciplinary approach.

# PEDIATRIC INTEREST GROUPS

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## and FIELD PROGRAMS

## Camp Phoenix

JOSH WEISS and OLIVIA BLACKBURN



Every year, almost one million American children are burned. Fortunately, advancements in trauma and resuscitative care have improved the treatment and survival of these young patients. Despite these medical and surgical advances, the psychosocial care of pediatric burn victims continues long after discharge. These children often return home with scars as permanent reminders of their trauma and the aftermath of surviving a serious burn usually includes considerable stress, diminished self esteem, and difficulty creating positive social relationships. Camp Phoenix, the first burn camp in the United States run by medical students, was founded in 2000 by Paul Mullan, a 2004 Graduate of Weill Cornell Medical College. Since then, Camp Phoenix has provided a safe environment for pediatric burn survivors and their siblings to interact with their peers and share their experiences.

Camp Phoenix sponsors three single day events and one overnight camping trip each year. Past events have been held at the Intrepid Museum, the Bronx Zoo, Lucky Strikes Bowling, Sony Wonder Technology Lab, Chelsea Piers, New York Knicks games, the Museum of Natural History and NYC Firehouses, amongst many others. We have worked with over 250 children at these events, with an average of 30 campers and 25 volunteer counselors at each event. Camp Phoenix activities are designed to build confidence, emphasize teamwork, initiate friendship, and maximize fun.

Last June, a group of almost 30 campers and volunteer counselors spent an incredible three days at Camp Kinder in Hopewell Junction, NY. The overnight camping trip is always especially memorable. Campers participate in activities such as canoeing, tie-dye, and hiking. For many of our campers, this is their first time away from home and outside of an urban setting. Campers are divided into cabins, where they work together and quickly develop their sense of community and camaraderie. They create cabin names and cheers and group enthusiasm is rewarded as the cabins participate in one of Camp Phoenix's favorite traditions, the Messy Olympics. Campers compete for cabin pride in games such as the Human Ice Cream Sundae.

In addition to helping the campers and their families, Camp Phoenix offers a unique educational experience for the medical students involved. Our volunteers serve as mentors for children with a range of medical and psychosocial issues, allowing them to hone their skills as leaders, role models, and caretakers. Positive experiences at the day events and overnight camp weekend have inspired many volunteers to develop interest in Pediatrics and Burn Surgery.

Camp Phoenix aims to give future physicians opportunities outside of the classroom to better appreciate the art of compassionate and empathetic care for complex patients. Started in 2011, our shadowing program allows medical students to spend time with the pediatric team in the burn unit. We expect to enhance this shadowing program further with the 2013 implementation of burn surgery shadowing. These experiences will help students learn about the inpatient and surgical experiences of our campers and relevant psychosocial issues. These experiences are meant to educate all interested students about what our campers went through during the rehabilitation phase of their burn care and to have any questions and concerns fully addressed by experts.

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# Chemistry for Kids

MARIA SACTA

Chemistry for Kids exists to give underprivileged young students the opportunity to experience science in fun and exciting ways. We hope that through our interactive experiments we can provide young students an avenue to explore their interests in science, and inspire them to become future scientists and doctors. Overall, our main priority is to show students that science can be fun!

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# The Heads Up! Pediatric Literacy Program

A Project of the Weill Cornell Medical College Department of Pediatrics

Economic disadvantage and limited parental education mean that children born into poverty are susceptible to delays in language development. These children routinely lag behind their peers before pre-school or kindergarten even begins. In most cases, this gap continues to widen in elementary and middle school as children with poorer educational foundations fall further below school standards. Weakness in language and reading skills can lead to poorer educational and health outcomes, such as school failure, low self-esteem, troubled behavior, and substance abuse. In contrast, recent studies have shown that reading aloud to children from early on in life has positive effects on children's language and pre-literacy skills.

In an effort to improve early literacy, the Heads Up! Pediatric Literacy program has initiated an intervention mediated by pediatric primary care physicians. Doctors are the professional constituent with the most access to children and parents before school begins. By having physicians alert parents to the need to read to their young children—and by giving an age-appropriate book as part of the physical exam—we make the promotion of early language and literacy development a standard part of primary pediatric care.

Beyond encouraging language development and school readiness, books can also be used for assessment in the exam room. Books can help physicians see whether a four month-old reaches for objects or if a child who moves to accept a book has a normal gait. In addition, at WCMC, trained volunteers help children select more books and conduct parent outreach in the waiting room.

Because we believe deeply in the mission of promoting child literacy, we are working hard to keep this program going as strong as ever through continued involvement with volunteers as well as book donations.

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# Health For Life

ALEXA DAVID and OLIVA BLACKBURN

Health for Life is a program run by the NYPH Department of Pediatrics that works with overweight children. A team of pediatricians, physical therapists, social workers, nutritionists, and medical student volunteers help children and teens ages ~9 -18 learn about how to lead a healthier life. The 10 week program has 2 major components: exercise and nutrition. During the exercise sessions, participants discover fun new ways to incorporate physical activity into their lives. As part of this, all participants receive pedometers that they carry around for the duration of the program. The nutrition sessions focus on learning about which foods are healthy and easy ways to make everyday food healthier. The exercise portion includes lessons in yoga, boxing, and other fun exercises to motivate the children. Medical students get to form relationships with the children as well as the parents. In addition, students get to be role models and have a great time!

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# Health Professions Recruitment & Exposure Program (HPREP)

TIM SHEA - BIRRA TAHA - NATALIE WONG - BERNICE YAN - RUBEN JAUREGUI

The Health Professions Recruitment & Exposure Program (HPREP) is part of the Pipeline Mentoring Institute of the Student National Medical Association (SNMA). HPREP aims to expose high school students from underrepresented minorities to science, medicine and the health professions. The overarching goal is to encourage minority students to pursue a career in medicine by giving them meaningful exposure to the health field. During the three month after school program, the students attend a variety of lectures, participate in an anatomy lab dissection, receive assistance on their college application and essay, hear about the intersections of medicine and other disciplines, and build a lasting relationship with a medical student mentor. This year we anticipate around 90 high school students to engage roughly 45 medical students from across all classes to be mentors and role models for the high schoolers. HPREP has a rich history in the community, with alumni often coming back to speak on the program. This program began here at Cornell and has subsequently spread to many other medical colleges around the country.

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## The Komansky Center Family Advisory Council



The Komansky Center Family Advisory Council (KCFAC) is a group of 35 dedicated parents and family members of pediatric patients who are committed to working together as equal partners with hospital staff and administration to provide Patient and FamilyCentered Care to all patients since 2007. The work of the KCFAC members is organized in the following three areas:

**Quality and Patient Safety/Advisors:** The KCFAC members are active on numerous Departmental and Hospital Committees, including the Quality and Patient Safety Council. KCFAC members have direct impact and influence on policies, programs, and practices which affect the care and services of children and their loved ones. The KCCH joined the Solution for Patient Safety Learning Collaborative with over 97 hospitals working together to eliminate harm in pediatrics. We use the Patient and FamilyCentered approach to address current priorities in health care specifically in reducing readmission, decreasing infections and preventable medication errors, improving medication management, providing safe care transitions, and improving cost efficiency.

**Patient Experience/Support Group:** A child's stay in the hospital can often be a stressful and difficult time. Our members, through the sharing of their experiences, help guide other families and provide them with emotional support. From the parent lunches, teas and dinners to celebrating with patients and families at one of our many holiday events, we are committed to creating initiatives which supports families as well as systematically managing that support.

**Medical Education/Family Faculty:** Working in close collaboration with medical staff, we developed and host programs to educate interns, medical students and nurses on the principles of Family Centered Care. KCFAC parents are afforded the opportunity to impart their experiences and opinions in order to contribute a family point of view based on "real life" situations. Family Faculty Groups work closely with Drs. Jennifer DiPace and Thanakorn Jirasevijinda, and Nursing Educator Monique Zayas.

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# Motivating Action through Community Health Outreach (MACHO)

LESLIE HOTCHKISS and NICOLE AGUIRRE



Motivating Action through Community Health Outreach (MACHO) is a Weill Cornell Medical College student led, community centered response to the alarmingly increasing rate of childhood obesity, particularly within minority and socioeconomically disadvantaged communities. The program has a two-pronged approach to improving health within disadvantaged communities: the Youth Wellness and Youth Leadership programs. These programs are aimed at motivating young children to lead healthier lives and engaging high school students on health oriented community projects and leadership training.

**Mission:** The goal of MACHO is to empower youth with the knowledge and practical tools to take control of their health and find solutions health challenges facing their communities. Our focus is on proper nutrition, fitness, personal development and leadership. We aim to accomplish this goal by inspiring the adoption of healthy living habits, by guiding youth to become agents of healthy change in their community, and by partnering with community organizations to build a supportive network of empowered individuals and families.

**History:** MACHO was established in the fall of 2009 by a handful of Weill Cornell Medical College students who recognized the desperate need for education and resources to fight the obesity epidemic. It began as a pilot project and the program was then expanded in 20102011 to a full year curriculum that met once a week during the school year and every day in the summer. The scope of MACHO was broadened to include a pilot mentoring program, educational field trips, and assessments to track knowledge and fitness progress. The lessons from the first three years have served as a foundation for the revamped Youth Wellness Program and new initiatives for the upcoming year.

**Program:** The structure of the curriculum consists of twice weekly after school sessions coupled as well as occasional weekend sessions that focus on mentoring and personal development, with an effort to involve the families. For the after school program, our volunteer graduate and undergraduate teachers lead the nutrition, physiology and exercise classes under the leadership of a site coordinator. For the 20152016 year, the program continues to be held at the Silberman School of Social Work. The age range of our participants is 8-14 years.

**Members:** MACHO volunteers include students from WCMC, Cornell University, Columbia University, Hunter College, City College and Queens College. We are overseen by faculty advisors from New York Presbyterian Hospital Pediatrics department, WCMC, Hunter College, and Hunter School of Public Health and Social Work. Our community health outreach partners include the Boys' Club of New York, Settlement Health, Harlem Center for Healthy Living, and Choosing Healthy and Active Lifestyle for Kids (CHALK)

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# Weill Cornell Youth Scholars Program (WCYSP)

ANDREW HILLMAN

The main purpose of the Weill Cornell Youth Scholars Program (WCYSP) is to expose underprivileged, underrepresented students, especially from inner city high schools, to the vast educational resources and opportunities at Weill Cornell Medical College and NewYork Presbyterian Hospital. Many of these high schools have exceptionally high drop out rates that coincide with low percentages of graduates that go on to attend a four year university. By developing early experiences in medicine, students can develop appropriate attitudes towards their education, interpersonal skills, and more importantly, confidence in themselves to succeed academically. The WCYSP curriculum is designed to educate, inspire, and groom participants for personal and professional success. We seek to address some of the weaknesses that prevent many inner city students from performing well at the college level through an innovative format that emphasizes critical reading and writing. Students attend lectures, given by WCMC students, in physiology, anatomy, and basic science. Our daily Problem Based Learning (PBL) sessions provide a forum for youth scholars to interact with one another and build their teamwork abilities. All high school students that completed the program reported that it had a significant impact on their personal motivation to pursue a career in science or medicine and are more motivated to take more challenging courses in high school. Moreover, all of the students who graduated from the program matriculated in college and most who are now in college plan on majoring in science and/or pursuing a premed track. Weill Cornell medical students, residents and attending physicians serve as mentors and teachers in the program. Volunteer teachers can choose one or more topics and will be given lecture notes and powerpoint slides that are already prepared for each topic. Alternatively, volunteer teachers may use their own teaching materials for their particular topic. The program runs for one month every July from Tuesday to Friday. Typically, each lecturer will give one or two one hour lectures, but can choose to volunteer more of their time. We also recruit new leadership every year to plan the next summer's program under the guidance of leaders from the previous year.

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# MENTORING AND RESEARCH

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**Mary Jo Ward, Ph.D.**



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**Roger Widmann, M.D.**  
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**Stefan Worgall, MD, PhD**  
Pediatric Allergy, Immunology, Pulmonology  
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# RESEARCH OPPORTUNITIES IN PEDIATRICS

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**Erika Abramson, MD, MS**

General Academic Pediatrics  
Department of Pediatrics,  
Department of Healthcare Policy and Research  
Weill Cornell Medical College  
212-746-3929  
err9009@med.cornell.edu

Field(s) of Interest: Pediatric hospitalist and outpatient medicine, health services research, healthcare safety and quality research

Research Title: Health services research, healthcare safety and quality research

Project Description: I am working on a health services research qualitative study assessing the implementation of various health information exchange interventions designed to improve patient care in the Bronx.

I am also working, with several residents and a medical student, on a project assessing the outcome for infants born to mothers who are GBS positive but treated with clindamycin and gentamycin, a popular but understudied treatment regimen.

Students' Role in the Projects: For the qualitative project, students would have the opportunity to participate in 1:1 interviews with study subjects. They would learn qualitative data analysis techniques and have the opportunity to participate in research team meetings where we discuss study design, data collection, analysis and manuscript writing.

For the newborn project, students would have the opportunity to conduct retrospective chart reviews and participate in data analysis and manuscript writing.

Preferred Experience: None required

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**Oleh Akchurin, MD**

Assistant Professor of Pediatrics  
Division of Nephrology  
Weill Cornell Medical College  
646-962-4324  
oma9005@med.cornell.edu

Field(s) of interest: Pediatric nephrology. Might be also considered by students interested in pediatric endocrinology, rheumatology, immunology and general pediatrics.

Research Title: The role of inflammation in growth impairment and modulation of pro-inflammatory activity by growth hormone therapy in children with chronic kidney disease

Project Description: This project has retrospective and prospective arms. Medical students may be particularly interested in the retrospective arm. Study is already IRB-approved.

Students' Role in the Project: Data abstraction, processing and analysis, presentation the results at scientific meetings.

Preferred Background/ Experience: Excel skills will help. If the student can work with SPSS or similar packages (Stata, SAS, R) it would be fantastic but not required. If there are any students with experience in NHANES, I have some potential projects with NHANES also.

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**Adele Boskey, Ph.D.**

Musculoskeletal Integrity Program  
Hospital for Special Surgery;  
212-606-1453  
boskeya@hss.edu

Field(s) of Interest: Mineralization, matrix formation, bone development and repair.

Research Title: Mineral analysis in bones of animals with developmental abnormalities

Project Description: The goals of one of the major project in this laboratory is the determination of how matrix proteins regulate biomineralization. As such we study the effects of these proteins in solution, in culture, and when they are ablated or over expressed in transgenic animals. The project would be based on one of the models currently under investigation, where the student would do the histology, and work on the infra red imaging analysis of the bones of animals of different ages.

Students' Role in the Project: Infrared and microCT analyses of bones and teeth of a specific KO or TG animal. Student will learn about the ablated protein and perform IR Imaging and microCT

Preferred Background/ Experience: Student should have computer skills

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**James B Bussel, MD**

Department of Pediatrics  
Weill Medical College of Cornell  
212-746-3474  
jbussel@med.cornell.edu

Field(s) of Interest: Hematology/ Oncology

- Antenatal Management of Fetal Alloimmune Thrombocytopenia
- Experimental treatments of Refractory ITP

Project Description: Diagnosis, counseling, and entry into a multi-center randomized clinical trial. We design and coordinate this study, which is intended to prevent intracranial hemorrhage from immune thrombocytopenia in fetuses and neonates by administering treatment to mothers while they are pregnant who have a platelet antigen incompatibility with their husbands.

We have also started work on a prophylaxis project to prevent women at risk from developing Alloimmune thrombocytopenia.

Children and adults with difficult to treat ITP are enrolled on treatment protocols of various agents including thrombopoietic agents, anti-CD20 including augmented versions with high dose steroids and/or anti-T cell agents, IV gammaglobulin, and inhibitors of syk and other novel agents. All of the studies have collaborative laboratory studies) connected with them.

Students' Role in the Project:

A) Helping to collect data. This entails contacting other centers to ensure that the various components of the trial are sent to us: consents and IRB paperwork; infusion related data, lab work (maternal data and fetal sonos), and follow up information on the neonates and infants. It also involves reviewing charts and potentially contacting patients.

B) Helping to analyze the data that has been collected.

C). Design and contribute to special projects related to AIT study eg an investigation of autoimmunity in the mothers who have alloimmune thrombocytopenia .

1. Monitor the individual ITP patients to ensure that their visits and studies occur as per protocol and that the appropriate information is collected.
2. Help to develop new studies connected with individual protocol agents and/or help to develop novel studies of new agents .
3. Ongoing analysis of data to determine progress with protocols.
4. Facilitate laboratory studies by pulling freezer specimens to be batched and sent off

Preferred Background/ Experience: None (clinical not laboratory research)

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**BJ Casey, PhD**

Sackler Institute, Department of Psychiatry  
Weill Medical College, Suite F-1332  
bjc2002@med.cornell.edu

Field(s) of Interest: Developmental cognitive neuroscience

Research Title: Research in Developmental Psychobiology

Project Description:

Work on developmental brain imaging studies using functional magnetic resonance imaging and fiber tracking with diffusion tensor imaging to examine limbic forebrain regions implicated in addiction and impulsivity.

Work on attention and reading training interventions and how they impact behavior and neural systems testing pre and post-training effects with functional magnetic resonance imaging and diffusion tensor imaging. This work is relevant for the disorders of ADHD and reading disorders.

Work on developmental brain imaging studies using functional magnetic resonance imaging and fiber tracking with diffusion tensor imaging to examine limbic forebrain regions implicated in addiction and impulsivity.

Work on attention and reading training interventions and how they impact behavior and neural systems testing pre and post-training effects with functional magnetic resonance imaging and diffusion tensor imaging. This work is relevant for the disorders of ADHD and reading disorders.

Students' Role in the Project: Students would be provided with background reading, IRB and HIPAA training, image analysis, behavioral testing, programming and scientific discussions. Typically students are exposed to every aspect of the study and depending on contributions in the lab can be a co-author on a paper or conference presentation and as such get writing experience too. The student is jointly mentored by a team of investigators including pre and post-doctoral fellows and a faculty PI.

Preferred Background/Experience: Yes, some general computer experience would be very helpful.

**Marisa Censani, MD**  
Pediatric Endocrinology  
Department of Pediatrics,  
Weill Cornell Medical College  
212-746-3462  
mac9232@med.cornell.edu

Field(s) of Interest: Obesity and insulin resistance, bone and mineral metabolism, growth, thyroid disorders, and diabetes.

Research Title: Titles are pending. Topics include obesity and bone mineral metabolism

Project Description: Pending; please contact Dr. Censani

Preferred Background/ Experience: None

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**Margaret Crow, MD**  
Hospital for Special Surgery  
Department of Rheumatology  
535 East 70<sup>th</sup> Street, Room R-200  
212-606-1397  
crowm@hss.edu

Field(s) of Interest: Autoimmune Disease; Immunoregulation

Research Title: Regulation of the Immune Response in Autoimmune Disease

Project Description: The laboratory studies the human immune system in healthy individuals and patients with systemic lupus erythematosus to better understand the triggers and mediators of autoimmunity and inflammation in that disease. Students are welcome to participate in ongoing laboratory projects, or initiate their own projects, that use cell culture, flow cytometry, real-time PCR, cell transfection, protein analysis, and other approaches to study mechanisms of autoimmunity.

Preferred Background/ Experience: None, although laboratory experience helps.

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**Diane Felsen, PhD and Dix P Poppas, MD**  
Pediatric Urology  
Department of Pediatrics  
The Weill Medical College of Cornell

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dfelsen@med.cornell.edu

Field(s) of Interest: Uretal obstruction- renal histopathology and function

Field(s) of Interest: Uretal obstruction- renal histopathology and function

Project Descriptions:

Renal Dysfunction models: Hydronephrosis and polycystic kidney disease: In children, the most commonly detected prenatal anomaly is hydronephrosis, the dilation of the renal collecting system. Our laboratory has had a long-standing interest in the molecular mechanisms of damage to the kidney after obstruction, especially the fibrotic response, in which there is a pathologic accumulation of extracellular matrix proteins, which damage the kidney and reduce its function. One of the first events in the obstructed kidney is the build-up of pressure, which results from obstruction of the ureter. We have previously found that pressure activates important signaling pathways in the generation of Nitric Oxide, a cytokine with an important role in renal. Currently, we are investigating how pressure activates the fibrotic process in various cells in the kidney. These studies will use gene array, proteomic and metabolomic approaches to identify appropriate candidates. These studies will be important to determine if there are pathways which might be amenable to therapeutic intervention to halt or reverse renal damage in obstruction. We are also investigating an in vitro model of polycystic kidney disease. Using embryonic kidneys, we are studying different signaling pathways and examining their role in cAMP-mediated cyst formation.

Design of a Synthetic Bladder Augment Patch: Bladder dysfunction related to small, fibrotic bladders is a significant problem in children, resulting in high bladder storage pressures and low bladder volume. The high pressures that build up impact upon bladder function by inducing fibrosis and on quality of life because of incontinence; if left untreated, high bladder pressure can lead to renal failure and a lifetime of dialysis, or renal transplantation. The conventional surgical approach to increase bladder size is bladder augmentation [ileocystoplasty], which is associated with significant morbidity. In our laboratory, we are interested in designing a synthetic bladder augmentation patch to increase the bladder storage capacity. This approach would reduce much of the current surgical morbidity, and would also eliminate the metabolic complications of ileocystoplasty. Studies are underway to determine the biocompatibility of the synthetic patch to determine its suitability for use in vivo.

Effect of Androgens on Development of Genitourinary Tissue : Congenital Adrenal Hyperplasia is an inherited deficiency of certain enzymes involved in the production of male hormones [such as androgens]. The most common deficiency is 21-hydroxylase, the enzyme involved in cortisol production. The deficiency of 21-hydroxylase not only decreases cortisol, but also stimulates adrenocorticotrophic hormone, leading to excess male hormones. In females, the result of this enzyme deficiency is virilization [the appearance of secondary male characters in the female], which begin in utero; these girls are born with genital ambiguity and an enlarged clitoris. The molecular mechanisms controlling androgen's action in the clitoris are unknown. Therefore, we are studying the in vitro expression of androgen and estrogen receptors in surgical waste tissue obtained from CAH patients. These preliminary studies will allow us to understand how androgens act on female genitalia, so that we may be able to design strategies to prevent female genitals from the negative effects of androgen excess in CAH.

Wound Healing: The healing of acute cutaneous wounds requires interactions among cytokines, immune cells, parenchymal cells, and components of the extracellular matrix. This process is dynamic and results in scar formation, which restores functional continuity in the affected area. Compromise of the wound-healing process contributes to significant morbidity and even death. Our laboratory has developed a model in which to study wound healing in full thickness human skin. This model was originally developed using pediatric foreskin and was used in several studies by our laboratory. We have recently expanded the model to use adult tissue and to

study aspects of the immunology of wound healing in both adult and pediatric skin. We have further adapted this model for use in studies on squamous cell carcinoma.

Students' Role in the Project: Students will learn basic biochemical and molecular biology techniques including immunostaining, PCR, and western blot analysis. They will use these skills in experiments evaluating the effects of pressure on cells in the urinary tract.

Preferred Background/ Experience: Willingness to learn and work hard and committed interest are pre-requisites.

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**Maura D. Frank, MD**

Department of Pediatrics  
The Weill Medical College  
Helmsley Tower Room 508  
212-746-3353  
mdfrank@med.cornell.edu

Field(s) of Interest: Obesity

Research Title: Effect of weight management program on weight/BMI, eating and physical activity behaviors, and quality of life.

Project Description: Data entry and management, study recruitment, medical student mentoring program, IRB proposal development.

Students' Role in the Project: Student will learn the basics of research project development, recruitment for research projects, formulation of an abstract.

Preferred Background/ Experience: Knowledge of Excel helpful, student will learn EndNote

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**Cori Green, MD, MS**

General Academic Pediatrics  
Department of Pediatrics, Weill Cornell  
Associate Director of Pediatric Undergraduate Medical Education  
Director, Pediatric Sub-Internship  
212-746-0921  
cmg9004@med.cornell.edu

Field(s) of interest: Integration of pediatric mental health (MH) care into primary care, mental health screening, co-located models of behavioral health, resident education in pediatric mental health care

Current Project Title: The Need for Community Resources to Best Integrate Mental Health Care into the Primary Medical Home

Principal Investigators: Dr. Cori Green, Dr. Elisa Hampton, Dr. Eleanor Bathory

Project Description: We are conducting a needs assessment of how our clinic is doing with caring for our patients early mental health needs. We are assessing residents and parents through qualitative and

quantitative research methods. We are also performing community asset mapping to improve our patients' access to MH resources in the community.

Students' Role in the Projects:

Students will be involved in recruitment of resident subjects, analysis of data, and abstract writing.

Preferred Experience: None required

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**Daniel W. Green, MS, MD**

Hospital for Special Surgery  
535 East 70<sup>th</sup> Street, New York, NY 10021  
212-606-1631  
greendw@hss.edu

Field(s) of Interest: Pediatric Orthopedic Surgery and Scoliosis

Research Title: Selected clinical projects in pediatric orthopedic surgery

Project Description: Previous projects include: DDH, congenital muscular torticollis, discoid meniscus, scoliosis and kyphosis.

Students' Role in the Project: Literature review, radiograph review, data analysis

Preferred Background/ Experience: None requested

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**Alan Groves, MD**

Neonatology  
Department of Pediatrics,  
Weill Cornell Medical College  
212-746-3530  
alg2049@med.cornell.edu

Field(s) of Interest: Heart function in the newborn

Project Description: Upcoming project on hemodynamics in the newborn.

Students' Role in the Project: Possibly help analyze echocardiography and bioimpedance data to assess the impact of clinical interventions on brain blood flow.

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**Barry Kosofsky, MD, PhD**

Department of Pediatrics, Division of Neurology  
The Weill Medical College of Cornell University  
525 East 68<sup>th</sup> Street, Room LC-6  
212-746-3321  
bar2009@med.cornell.edu

Research Title: Identifying biomarkers of mild traumatic brain injury (mTBI)



Project Description: We have a multidisciplinary basic (based at the Burke Research Institute) and clinical (based at NYPH/WCMC) translational research program to identify molecular (signaling pathways), functional (using eye tracking, and neuropsychologic assessments), and structural (using DTI/MRI) changes in the brain following mTBI. Our goal is to identify a set of actionable biomarkers reflective of mTBI as a starting point for designing a clinical trial.

Students' role in the project: Basic and/or Clinical Research Skills, including molecular biology, DTI/MRI, and neuropsychologic analyses.

Preferred Background/ Experience: Bench/wet lab or clinical/dry lab experience preferred (especially familiarity with animal models of mTBI, or prior work in clinical trials).

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**Nicole Kucine, MD**

Pediatric Hematology/Oncology  
Department of Pediatrics  
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nik9015@med.cornell.edu

Field(s) of Interest: Sickle Cell Disease, Anemia, Coagulation and Bleeding Disorders, Myeloproliferative Neoplasms, Leukemia, Bone Marrow Failure/Abnormal Hematopoiesis

Potential Research Topics: I am currently conducting research with various pediatric residents as well as on my own, and have some research interests that have not yet been developed. Topics of research that may be eligible for student involvement include:

1. Development of a database for Pediatric Myeloproliferative Neoplasms
  2. Evaluation of thrombosis in pediatric patients (multiple projects under discussion)
  3. Evaluation of practitioner attitudes and assessment of barriers in providing adequate pain management to children with Sickle Cell Anemia in the Pediatric ER
  4. Issues surrounding chronic illness and mental health
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**Juhi Kumar, MD, MPH**

Pediatric Nephrology  
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Field(s) of Interest: Pediatric renal disease, vitamin D, kidney transport, Focal segmental glomerulosclerosis

Research Projects:

1. Vitamin D in children with chronic kidney disease (CKD): prevalence of deficiency and clinical correlates: This is a NIH funded ancillary study to the ongoing multicenter, prospective cohort study of children with CKD (CKiD). This study aims to define the prevalence and correlates of vitamin D deficiency. It will also prospectively evaluate the role of Vitamin D deficiency in growth failure, progression of CKD and cardiovascular outcomes.
2. Vitamin D supplementation in children with chronic kidney disease: Current guidelines for vitamin D supplementation in children with CKD are not evidence based and are extrapolated from adults. This study aims to evaluate the adequacy of the current KDOQI recommendations for treating vitamin D deficiency in these children.

3. Kidney transplant outcomes: This proposal aims to evaluate the effects of using a steroid free immunosuppression protocol on outcomes such as growth, allograft rejection and cardiovascular profile.
  4. Gut microbiome in Chronic kidney disease: This proposal aims to examine the gut microbiome in patients with CKD and also determine the impact of the gut microbiome on immune function.
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**Thomas J.A. Lehman, MD**

Hospital for Special Surgery  
Pediatric Rheumatology  
535 E. 70<sup>th</sup> St.  
212-606-1158  
lehmant@hss.edu

Field(s) of Interest: Pediatric rheumatic diseases

Project Description: Students have been involved in a variety of clinical research projects over the past years.

Students' Role in the Project: Chart review, data tabulation. We also teach basic aspects of clinical pediatric rheumatology/history.

Preferred Background/ Experience: None requested

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**David C. Lyden, MD, PhD**

Stavros S. Niarchos Professor  
Children's Cancer and Blood Foundation Labs  
413 East 69<sup>th</sup> Street  
Rm 1228, Belfer Building  
dcl2001@med.cornell.edu

Field(s) of Interest: Cancer Metastasis

Research Title: Tumor exosomes determine pre-metastatic niche formation and organotropism

Project Description: Tumor microparticles known as exosomes are released into the circulation and fuse with specific cells at distant sites establishing a pre-metastatic niche in cancer patients. Tumor exosomes transfer exosomal tumor contents (proteins, miRNA and DNA) into normal cells and "educate" these cells to a pro-metastatic phenotype.

Students' Role in the Project: The student will be responsible for determining the key factors associated with exosomes that support their role in organotropism.

Preferred Background/ Experience: None requested

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**Catharine McGuinn, MD**

Pediatric Hematology/Oncology  
Department of Pediatrics,  
Weill Cornell Medical College  
212-746-3400

cam9061@med.cornell.edu

Field(s) of Interest: Benign Hematology, Thrombosis, Coagulation, Thrombocytopenia

Research Title: Quality Improvement/ Outcomes in Pediatric Hematology Population

Description of Project(s): To be decided in conjunction with research team. Prospective survey or retrospective chart review format. Ideas include looking at sickle cell pain management pathway, anti-coagulation adherence, etc.

Students' Role in the Project: Flexible. Would be developed as project expanded

Preferred Background/ Experience: None requested Enthusiasm is important.

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**W Beau Mitchell, MD**

Pediatric Hematology/Oncology

Department of Pediatrics,

Weill Cornell Medical College

Laboratory Address: New York Blood Center Platelet Biology

212-570-3280

E-mail Address: bmitchell@nybloodcenter.org

Fields of Interest: Clinical and laboratory aspects of bleeding, clotting, and platelet biology

Research Project 1: Bleeding complications in patients with connective tissue disorders.

Description of Project: We have seen a series of patients with connective tissue disorders who present with bleeding. This project will be a retrospective chart review to compile and analyze the bleeding characteristics of this population. Given the large sample size this project should provide unique information about bleeding in connective tissue disorders.

Students' Role in the Project: Chart review. Assistance with IRB process, scientific writing.

Preferred Background/ Experience: None

Research Project 2: A novel mutation resulting in an unusual type 2A von Willebrand Disease

Description of Project: We have identified a family with a novel mutation causing severe type 2A VWD. The mutation completely eliminates some aspects of von Willebrand factor function, but leaves others intact. Review of these patients' laboratory and clinical findings in concert with what is known of the VWF structure will likely reveal novel information about VWF structure and function.

Students' Role in the Project: Chart review. Assist with IRB submission. Review of literature. Scientific writing. Work with 3D structure imaging software.

Preferred Background/ Experience: None, although it would help if adept at computers.

Research Project 3: Morphology of platelets during thrombopoiesis

Description of Project: We are producing platelets from stem cells derived from umbilical cord blood cells. One critical question is whether the produced platelets are “normal”. To determine this we are analyzing the platelets in several different ways. One of these ways is by morphology. We use both light and fluorescence microscopy to study the platelets as they are being produced in culture. This project will establish a baseline morphology by which to judge the effects of changes in the production techniques.

Students’ Role in the Project: This will be primarily a visual cataloging of microscopy images. The student will learn to use our imaging software and microscopes.

Preferred Background/ Experience: None, but will have to take the NYBC volunteer orientation.

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**Marianne Nellis, MD, MS**  
Division of Pediatric Critical Care  
Department of Pediatrics,  
Weill Cornell Medical College  
212-746-3056  
man9026@med.cornell.edu

Field(s) of Interest: Transfusion medicine research

Research Title: The Effects of Transfusion of Blood Products in Critically Ill Children

Project Description: I am working on several prospective projects looking at the effects of pRBC transfusions on critically ill children.

Students’ Role in the Projects: Students can be involved in the acquisition of blood specimens (no venipuncture required) as well as participation in flow cytometry (with Dr. John Mitsios in the department of pathology). Students can participate in data acquisition, analysis and manuscript writing.

In addition, I am working on a prospective study examining predictors of bleeding in critically ill children. For this project, students can participate in data acquisition, analysis and manuscript writing.

Preferred Experience: None required

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**Snezana Nena Osorio,MD**  
General Academic Pediatrics  
Department of Pediatrics, Weill Cornell  
212-746-3457  
snm2001@med.cornell.edu

Field of Interest: Safety & quality in healthcare

Title of Project: Improving Pediatric Patient-Centered Care Transitions: A Multi-Center Research Quality Improvement Collaborative

Project Description: This study aims to promote partnership between patients/parents/caregivers and medical teams via shared ownership of care transitions at hospital discharge. The transition from the inpatient to outpatient setting presents a safety risk to pediatric patients. Errors in improper medication use, failure to

recognize and activate contingency plans, and failure to adhere to follow-up appointments reflect poor patient hand-off prior to hospital discharge. We aim to improve parent/caregiver self-management. Our intervention- Pediatric Discharge Bundle consists of 1) pre-discharge confirmation of patient/caregiver readiness for discharge, 2) caregiver's ability to teach-back essential components of a patient/caregiver-generated care plan, and 3) post-discharge phone follow-up to review essential information and clarify questions to "bridge the gap" prior to follow-up with the PCP. Our secondary objectives are to improve care coordination, provider handoff, and to decrease readmission rate.

**Medical Student Research Opportunities IMPACT Study:**

**Teach Back Direct Observation:** to evaluate the quality of the Teach Back technique used at hospital discharge by the nursing staff. After training, students will observe discharge instructions by nursing staff using a checklist-type instrument. Schedule is flexible and can be in the afternoon or evening.

**Preventable Readmissions:** to understand the epidemiology of preventable pediatric readmissions and to identify the risk factors contributing to preventable readmissions. After training, students will 1) review charts to determine the causes for readmission using an established tool; 2) interview caregiver in person or by phone about their hospital experience.

**Provider Satisfaction Surveys and Qualitative Study:** to better understand discharge communication needs to handoff patients from the hospitalist services to outpatient subspecialty providers.

Preferred Background/ Experience: None

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**Jeffrey Perlman, MD**

Department of Pediatrics, Division of Neonatology  
Weill Medical College  
jmp2007@med.cornell.edu  
212-746-3530

Field(s) of Interest: Neonatology, Brain development, Resuscitation, Global health

Title of Research Project: Evaluation of the Ergonomics of Chest Compressions in a Neonatal Manikin Model

Project Description: Evaluate the influence of compression rates on the depth of compressions including decay over time as well as the potential influence of surface location and gender as well as the impact of ventilations

Students' Role in the Project: Assist in the evaluations of data following a session and help to develop strategies to enhance CPR in the neonatal period

Preferred Background/ Experience: None

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**Cathleen L. Raggio, MD**

Hospital for Special Surgery  
212-606-1339  
raggioc@hss.edu

Project Description: Pediatric, clinical and lab research. Spine Osteogenesis Imperfecta, Skeletal Dysplasia

Students' Role in the Project: Patient interaction, dissection, x-ray review, computer work

Preferred Background/ Experience: Good work ethic and enthusiasm

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**Heidi Stuhlmann, PhD**

Developmental Biology

Department of Cell & Developmental Biology (primary)

Department of Pediatrics (secondary)

212-746-6156

hes2011@med.cornell.edu

Research Title: Placental Development and Placentopathies

The placenta serves as the site of contact for the maternal and embryonic circulatory systems to enable nutrient and gas exchange. It contains two primary functional cell types, trophoblast and endothelial cells. Proper placental development requires invasion and differentiation of trophoblast cells, as well as coordinated maternal vascular remodeling and fetal vasculogenesis. Any disruption in these processes can result in placental pathologies, including preeclampsia (PE). PE is a leading cause of maternal and fetal morbidity and mortality worldwide, and the only resolute treatment is delivery of the baby and placenta. Although the pathophysiology of PE remains largely unknown, inadequate trophoblast cell invasion, endothelial cell dysfunction, dysregulated uteroplacental vascularization, and an imbalance of pro- and anti-angiogenic growth factors have been implicated in the disease.

We are using mouse models and human placentas to investigate the role of EGFL7 during normal and pathological placental development. EGFL7 is a secreted factor that was previously thought to be endothelial-restricted in its expression. However, our recent studies revealed that Egfl7 is expressed in the placenta by the endothelium of both the maternal and fetal vasculature, as well as in a previously unknown site, the trophoblast cell lineage. Our results showed a significant down-regulation of Egfl7 expression in human PE placentas at term and in compromised placentas of a mouse model of PE prior to the onset of the characteristic maternal signs of PE (Lacko et al., 2014. Novel expression of EGFL7 in placental trophoblast and endothelial cells and its implication in preeclampsia. Mech. Dev. 133:163-176).

Preliminary studies from our lab, using gain- and loss-of-function mouse models, point to specific roles for EGFL7 during placental development. We also have a keen interest to understand its role in human placentas and preeclampsia. Specifically, we plan to investigate if EGFL7 protein can be detected in the serum during pregnancy, and if EGFL7 is an early indicator for the onset of preeclampsia.

Students' Role in the Project: The student would get "hands-on" lab experience. Initially, the student would work together with a research scientist in the lab to learn and master the required techniques, and later work more independently. The laboratory techniques could involve:

ELISA assay; extraction of protein from tissue sample; protein gel electrophoresis; western blot analysis; extraction of DNA from tissue samples; PCR amplification, DNA gel electrophoresis, preparation of sample for DNA sequence analysis; dissection of mouse embryos; embedding and sectioning, immunostaining/immunofluorescence analysis

Preferred Background/ Experience: Basic lab skills, knowledge in molecular and developmental biology, strong interest in research

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**Sima Toussi, MD**

Division of Infectious Disease

Department of Pediatrics, Weill Cornell  
212-746-7379  
sst2002@med.cornell.edu

Field(s) of Interest: Pediatric Infectious Diseases

Research Title 1: *Clostridium difficile* colonization in infants and young children

Project Description: *Clostridium difficile* can cause diarrhea and severe illness in children and adults. *C. difficile* infection is likely under-recognized in the young pediatric population. Infants and young children are often not evaluated for *C. difficile* infection because it is thought to colonize their gut. However, it is unknown how commonly it colonizes the stool of young children. The rates published are extremely wide ranging and reported as being anywhere from 10-100% during the first year of life. The objective of this study is to describe the prevalence of *C. difficile* colonization in infants and young children and to assess possible risk factors.

Students' Role in the Project: The student's role will be the recruitment of study subjects in the inpatient and outpatient settings. This would involve learning how to consent and enroll patients with one of the co-investigator's and then eventually doing this independently. Part of the student's role will also be entry of the information into the database.

Preferred Background/ Experience: Interest in participating in clinical research.

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**Chani Traube, MD**

Pediatric Critical Care Medicine  
Department of Pediatrics, Weill Cornell  
212-746-3056, chr9008@med.cornell.edu

Field(s) of Interest: Pediatric Critical Care Medicine; Pediatric Neuro-Intensive Care

Research Title: A Prospective Longitudinal Assessment of Pediatric Delirium, Associated Risk Factors and Short Term Outcomes in Pediatric ICU Patients

Project Description:

The pediatric critical care community has just begun to explore delirium in its population, but an emerging literature indicates a prevalence greater than 20%, with associated short- and long-term morbidity. With an estimated 200,000 children admitted to intensive care in the US annually, more than 40,000 children are likely affected each year. At Cornell, we have implemented universal delirium screening in the PICU as standard of care. This study is designed to define the natural history of pediatric delirium, identify associated risk factors, and assess the impact of delirium on long-term cognition, behavior, and psychological health.

Students' Role in the Project: Students will have the opportunity to join a multidisciplinary team engaged in several projects regarding pediatric critical illness and delirium. They will participate in research study design, data collection, and manuscript writing. Students will learn how to obtain informed consent, conduct chart reviews, analyze data, and perform follow-up phone calls using surveys to detect whether a patient has experienced long-term effects from delirium.

Preferred Background/ Experience: None required. Interested students should be friendly, comfortable interacting with children and their families, and demonstrate organizational skills and attention to detail. Research is ongoing, with active clinical trials in progress, others pending IRB approval, and others in planning stage.

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**Susan J. Vannucci, PhD**

Neonatology  
Department of Pediatrics, Weill Cornell  
212-746 1446  
suv2003@med.cornell.edu

Field(s) of Interest: Developmental Brain Injury/Hypoxic Ischemic Encephalopathy/Hypoglycemia/Neonatal Seizures

Research Title: Hypoxia-Ischemia in the Immature Brain

Project Description: Hypoxic-Ischemic (HI) brain damage resulting from asphyxia in the neonatal period is a major cause of death of premature and term infants and responsible for permanent neurologic handicap in the survivors. We have developed an animal model to study this injury in the newborn rat and utilize this model in both preterm and term-equivalent rodents. HIE is a major cause of seizures yet there is continued debate as to whether these seizures contribute to or merely reflect the severity of brain damage. We have recently extended our HIE model to include the detection of behavioral and electrographic seizures to test several of these relevant questions. A second project using this model will continue to look at the role of mast cells in promoting inflammation and cell death following HI in the immature brain.

Students' Role in the Project: The student can assist in performing the surgeries to induce the hypoxia-ischemia, as well as in the recording of the video EEG. It is important that the student is comfortable working with animals and in survival surgeries as well as in euthanasia of the animals to study the effects on brain development and injury. In addition, the student could participate in the study of the role of mast cells in mediating the inflammatory cascade as well as potentially contributing to the tissue repair.

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**Mary Jo Ward, PhD**

Division of Child Development  
Department of Pediatrics  
The Weill Medical College of Cornell University  
mjward@med.cornell.edu

Field(s) of Interest: Development: infants, children, mother-child interaction

Research Title: Infant feeding skills, parental feeding practices, and growth disorders

Project Description: We will evaluate the effectiveness of an intervention delivered to the parents of infants from birth to 6 months of age. The study will include 75 families in a standard care group and 75 in an intervention group. The first group (standard care group) will receive routine well-child care on the schedule recommended by the American Academy of Pediatrics. The second (intervention group) will receive routine well-child care plus an intervention focused on teaching parents about age-appropriate infant nutrition and infant feeding skills. Group assignment will be made on the basis of historical cohort membership: the standard care group will be enrolled first and the intervention group enrolled approximately 3 months later. Subjects in both groups will be followed for 6 months. Outcome measures include parent feeding practices, infant diet, infant feeding skills, and infant overweight. Measures will address cultural and familial biases in favor of overweight children.

The following hypotheses will be tested:



- Compared to parents in the standard care group, more parents in the intervention group will report feeding only single-grain infant cereal and Stage 1 fruits and vegetables to their 6 month-olds. In contrast, more parents in the standard care group will report feeding Stage 2 and 3 foods, snacks, juice, and table foods.
- At 6 months, the rate of infant weight for length above the 75th percentile will be higher in the standard care versus intervention group.
- Parents in the intervention group will be more likely to report receiving accurate information about infant feeding and nutrition from their pediatricians than parents in the standard care group.
- More infants in the intervention than standard care group will use a cup for drinking and fewer will have been fed solid food in a baby bottle.

Student's role in the project: Students will be trained to conduct standardized interviews, to gather anthropometric data on adults and children, and to monitor delivery of the intervention, according to the research protocol.

Preferred Background/ Experience: Skills in interacting with adults from varied cultural backgrounds, interest in infant growth and development and primary care intervention models.

**Stefan Worgall, MD, PhD**  
 Pediatrics / Genetic Medicine  
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 212-746-4875  
 stw2006@med.cornell.edu

Field(s) of Interest: Cystic fibrosis / host defense in lung / gene therapy

Research Titles:

Lung antigen presenting cells in cystic fibrosis  
 Respiratory syncytial virus vaccine using capsid-modified adenovirus vectors

Project Descriptions:

1. Cystic fibrosis lung disease is characterized by exaggerated inflammation and increased susceptibility to infections. Although the CFTR protein is primarily thought to be expressed by epithelial cells we and others have studied the expression of CFTR in non-epithelial cells, in particular antigen presenting cells in the lung. This project studies the abnormalities of lung dendritic cells derived from CF knock-out mice. Our data so far indicates that abnormal CFTR expression lung macrophages and dendritic cells is related to abnormalities in innate immune responses. These findings are important in understanding lung disease in CF and also to identify new targets for therapy of this severe disease.

2. Infections with RSV are one of the major causes for viral lower respiratory tract illness, especially in young children. Our laboratory has been working on the development of genetic vaccines for pulmonary pathogens. This project aims to analyze the immunological properties of a novel anti-RSV vaccine using a capsid-modified adenovirus vector. Protection against RSV could be achieved with an efficient vaccination strategy inducing neutralizing humoral immunity as well as a Th1-dominant cellular response. Adenovirus gene transfer vectors can be used to evoke robust systemic and mucosal immunity against an immunogen expressed as a transgene and Ad functions as a potent adjuvants. The Ad modifications include the addition of a RGD motif to the fiber knob, a modification known to enhance infection of antigen presenting cells and to increase Th1-type immune response, as well as the addition of RSV epitopes into the Ad capsid. These modified vectors will be assessed to induce immunity and protection against RSV in adult and neonatal mouse models. The study will

evaluate if a modified Ad vector expressing the RSV F protein engineered to increase activation and infectivity of antigen presenting cells could be useful as a RSV vaccine.

Students' Role in the Project: Design of new and continuation of the present experiments. Student will be involved in cell culture studies and flow cytometry analysis of lung dendritic cells (project 1) and adenovirus vector construction and immunological analyses (project 2).

# PROGRAM MATCHING

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# CLASS OF 2015 PEDIATRIC RESIDENCY MATCHES

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Elizabeth MacIntyre	University of Miami, Miami Children's Hospital
Julia Rosenberg	Yale University School of Medicine, New Haven Hospital
Aaron Slinker	New York University School of Medicine, Langone Medical Center
Lea Bornstein	New York Presbyterian Hospital, Columbia University Medical Center
Hawa Forkpa	Northwestern University Feinberg School of Medicine, Lurie Children's Hospital
Nicole Ramsey	Baylor College of Medicine
Miriam Samstein	New York Presbyterian Hospital, Weill Cornell Medical Center

## DEPARTMENT OF PEDIATRICS GRADUATE MEDICAL EDUCATION CLASS OF 2015

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Karen Acker	Infectious Diseases, NYP-Columbia
Lauren Blatt	Neonatology, NYP-Weill Cornell
Kaleena Chartrand	Development/Behavioral Pediatrics, Albert Einstein/Montefiore Medical Center
Lingling Chen	Hematology/Oncology, Johns Hopkins Children's Center
Kristen Critelli	Gastroenterology, Children's Hospital of Pittsburgh
Guillermo De Angulo	General Pediatrics, locum tenens
Jennifer Garnett	Emergency Medicine, Mount Sinai
Ghada Harsouni	General Pediatrics, Chicago
Elizabeth Herrup	Critical Care, Johns Hopkins Children's Center
Matthew Marks	General Pediatrics, NYP-Lower Manhattan
Son McLaren	General Pediatrics, Boston Children's Hospital
Sara Munoz-Blanco	Neonatology, Johns Hopkins Children's Center
Eileen Nicoletti	Hematology/Oncology, MSKCC/ NYP-Weill Cornell
Jordanna Platt Koppel	General Pediatrics
Rachel Reed	Chief Resident, NYP-Weill Cornell
Sonia Singh	Hematology/Oncology, MSKCC/NYP-Weill Cornell
Mariel Smith	Chief Resident, MSKCC Hematology/Oncology, MSKCC/NYP-Weill Cornell
Megan Toal	Chief Resident, NYP-Weill Cornell
Nicole Uliassi	General Pediatrics
Mary Vernov	Neonatology, NYP-Weill Cornell

### **Chief Residents 2014-2015**

Sarah Blank	General Pediatrics, NYP-Columbia
Kimberly O'Hara	Hospitalist Medicine Fellowship, Children's Hospital Colorado

