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Reading the Fine Print: How We Discovered Infantile Beriberi in Bhutan

The following article is a guest contribution from Dr. Dinesh Pradhan, Pediatric Resident, Khesar Gyalpo University of Medical Sciences of Bhutan, Thimphu, Bhutan, in conjunction with Dr. Christoph Funk, Pediatric Intensivist, Dietrich-Bonhoeffer-Klinikum, Neubrandenburg, Germany. Leila Srour, MD, MPH, DTM&H, Chair of HVO's Pediatric Steering Committee, also contributed.

Background

Health Volunteers Overseas has a Memorandum of Understanding with Khesar Gyalpo University of Medical Sciences of Bhutan (KGUMSB) and its teaching hospital, Jigme Dorji Wangchuck National Referral Hospital (JDWNRH), to send specialist volunteers on a short-term basis to provide expert patient consultation as well as train the local faculty and residents.

The Successful Collaboration

The Pediatric Department of KGUMSB/JDWNRH receives HVO volunteers almost every month and has proven itself a successful model for volunteerassisted training in sub-specialties. In 2018, Dr. Christoph Funk, a Pediatric Intensivist from Germany, came on one such assignment for three months, July to September.

In his first week, I showed him a few children who were admitted with acute encephalopathy to our pediatric intensive care unit (PICU). I had seen these types of cases ever since I joined the Residency program in 2015 and had seen a pattern emerge. These patients were mostly exclusively breastfed and thriving infants, with the majority of them aged below 6 months, who initially presented with non-specific respiratory or gastrointestinal symptoms. Within a few days they rapidly progressed to acute encephalopathy, and developed irritability, reduced sensorium, seizures or coma. They then developed respiratory failure, renal failure and brain death, and succumbed to their illness in about a week.

Our department had been grappling with these cases with an extremely high mortality rate of almost 80 percent. The few survivors had serious neurological sequelae. Our management focused on treating them as "meningoencephalitis" cases with a possible viral etiology. We treated them with antibiotics, antivirals, anti-epileptics and general supportive care including nutrition, hydration and ventilatory support with dismal results. Our collaboration with the National Institute of Virology in India and the Centers for Disease Control and Prevention in the USA to isolate a virus from the cerebrospinal fluid of these children was not very successful.

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LETTER FROM THE EXECUTIVE DIRECTOR



"Teamwork is the ability to work together toward a common vision, the ability to direct individual accomplishments toward organizational objectives. It is the fuel that allows common people to attain uncommon results."

- Andrew Carnegie

Dear Friends,

I am so pleased to share with you the fascinating study that Dr. Dinesh Pradhan of Bhutan has described in our cover article. Not only are the results of the study life-saving for infants in Bhutan, but they also have the potential to change pediatric care in countries across the globe.

However, this is not just an article about a research study. It is a story about a team of people all working toward a common goal. It is a story of partnership, of two committed physicians who were determined to tackle a problem that had been confounding physicians for years. Their quest for an answer, their hypothesis, and their mutual respect led them to a solution. The collaboration with other Bhutanese physicians and HVO volunteers had everyone striving towards the same goal, and the support of Dr. Mimi Lhamu Mynak, the Chair of Pediatrics at Jigme Dorji Wangchuk National Referral Hospital, gave the team resounding approval to undertake such a study and set new protocols in the pediatric intensive care unit.

With the results of the study so dramatically positive, Dr. Christoph Funk of Germany urged Dr. Pradhan to submit their study to a pediatric conference in Germany. As always, funding for such a trip was a hurdle. Dr. Pradhan reached out to HVO's Wyss Scholarship for Future Leaders in Global Health and the committee enthusiastically provided support. Not only did Drs. Pradhan and Funk present their study at the conference, but they also used the opportunity for Dr. Pradhan to receive additional training in Germany and then observe pediatric cardiology care with another volunteer, Dr. Jakob Hauser in Austria.

This is such a wonderful example of how people from different cultures and professional backgrounds can work together to identify a problem and search for a solution, all while drawing on the input and support of so many other professionals. Such teamwork was indeed "the fuel" that helped to make this research study possible. Thank you to everyone who played a role, and best wishes as the research moves to the next stage of evaluation.

Sincerely,

Nancy

Nancy A. Kelly, MHS **Executive Director**

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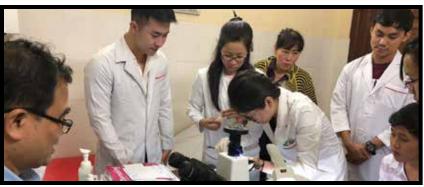
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Active Project Sites CURRENT VOLUNTEER OPPORTUNITIES



Anesthesia

Bhutan	4 weeks
Cambodia	2 - 4 weeks
Ghana	2 - 4 weeks
Laos	2 - 4 weeks
Malawi	2 - 4 weeks
Rwanda	2 - 4 weeks
Vietnam	2 - 4 weeks

Dermatology

Cambodia	2 - 3 weeks
Costa Rica	1 - 2 weeks
Nepal	1 - 4 weeks
Uganda	2 weeks
Vietnam	2 - 4 weeks

Hand Surgery

Honduras	 1	week

Hand Surgery/Hand Therapy

Ghana	2 - 4 weeks
Nicaragua	suspended

Hematology

Cambodia	2 - 4 weeks
Peru	2 - 4 weeks
Tanzania	1 - 4 weeks
Uganda	2 - 4 weeks

Internal Medicine

Bhutan	4 weeks
Cambodia	2 - 4 weeks
Costa Rica	2 weeks
Guyana	2 - 4 weeks

Internal Medicine

India	2 - 4 weeks
Nepal	3 - 4 weeks
Uganda	4 weeks

Nursing Education

Cambodia	2 - 4 weeks
Laos	4 weeks
Tanzania	3 - 4 weeks
Uganda	3 - 4 weeks
Vietnam	2 - 4 weeks

Obstetrics-Gynecology

Cambodia	2 weeks
Haiti	2 - 4 weeks
Uganda	1 week
Vietnam	2 - 3 weeks

Oncology

Bhutan	4 weeks
Honduras	1 week
Nepal (gyn-onc)	1 - 2 weeks
Nepal (med-onc)	2 - 3 weeks
Uganda	2 weeks

Oral Health

Haiti	1 week
Laos	1 - 2 weeks
Nepal	2 weeks
	1 - 2 weeks
	2 weeks

Orthopaedics

Pediatrics

Bhutan	4 weeks
Cambodia	4 weeks
Laos	4 weeks
Nepal	3 - 4 weeks
Nicaragua	suspended
St. Lucia	1 - 4 weeks
Uganda	4 weeks

Physical Therapy

Bhutan	2 - 4 months
India	2 - 4 weeks
Malawi	4 - 6 weeks
Rwanda	2 - 4 weeks
St. Lucia	1 - 4 weeks
Vietnam	2 - 4 weeks

Special Projects

Bhutan

Emergency Medicine	4 weeks
Mental Health	3 months
Residency Training	
(Anesthesia, General Medici	ne, General
Surgery, Ophthalmology, &	Pediatrics)

Uganda

Pharmacy	 3	_ 4	weel	ks
Haimacv	 2	- 4	wee	K۵

Wound Management

Cambodia	1 - 2 weeks
Haiti	1 - 2 weeks
India	2 - 4 weeks

Please Note: New projects are added regularly and volunteer assignments are made on a rolling basis. For the most up-to-date information on volunteer sites and scheduling, contact the HVO Program Department: info@hvousa.org or (202) 296-0928. Visit the website www.hvousa.org.



HVO MEMBERS IN THE NEWS

Celia Pechak Honored for **Service in Physical Therapy**

Celia Pechak, PT, PhD, MPH was presented with the Dr. Ronnie Leavitt Award, which honors those who have demonstrated leadership in the promotion of social responsibility in physical The award was presented by the American Physical Therapy Association's Global Health Special Interest Group (GHSIG), where Dr. Pechak has been quite active.

Dr. Pechak, a member of HVO since 1993, has certainly demonstrated leadership and global social responsibility with HVO. She has served on many volunteer assignments in Vietnam, Haiti, and Guatemala, conducted site assessments, and chaired the physical therapy steering committee. Dr. Pechak was honored with HVO's Golden Apple Award in 2008.

The GHSIG set up the award several years ago to honor Dr. Ronnie Leavitt, a physical therapist who has worked in global health care for many years. HVO is fortunate that she, too, is a longtime member of HVO.

Congratulations to Dr. Pechak on this recognition of her many years of service!



Drs. Pechak & Sander

Toni Sander Honored with **APTA Oncology Section Award**

Antoinette ("Toni") Sander, PT, DPT, MS, CLT-LANA was honored at the recent American Physical Therapy Association's Combined Sections Meeting. She received the Jeri F. Walton Service Award from the Academy of Oncologic The award recognizes Physical Therapy. members "whose work has resulted in lasting and significant advances in the science, education, and practice of the profession of physical therapy in oncology."

Dr. Sander has been an HVO member since 2005, and has volunteered on numerous occasions in India, Peru, Haiti, and Rwanda. She serves as project director for both India and Myanmar, where she conducted the site assessment, and she previously served on the physical therapy steering committee. In 2016, she was honored with HVO's Golden Apple Award.

Congratulations to Dr. Sander on this recognition of her many contributions to physical therapy!

Lewis Zirkle Receives Medal for **Distinguished Public Service**

Last year, Lewis G. Zirkle, MD was awarded the US Department of Defense Medal for Distinguished Public Service, which is the department's highest honor for private citizens. Presenting the award was then Secretary of Defense James Mattis, who referred to Dr. Zirkle's "unfailing sense of kindness and purpose [that] grew out of the traumas of war."

Dr. Zirkle served as an orthopaedic surgeon in the Vietnam war and saw the difficulties of patients in low-income countries. Over the years, he began traveling to Vietnam and Indonesia to treat patients and teach orthopaedic surgeons. He also realized that the local facilities lacked equipment to perform necessary orthopaedic surgery, so he established SIGN Fracture Care International in 1999. The organization provides education for orthopaedic surgeons from low-



income countries and donates instruments and implants that are technologically appropriate. The SIGN surgery allows for a rapid recovery (days and weeks, rather than months of traction patients might have previously faced) and has been provided in 50 countries across the globe.

Dr. Zirkle has been an HVO member since 1981, and has volunteered on numerous trips to Vietnam, and conducted site assessments. He was honored with the Orthopaedics Overseas Volunteer of the Year Award in 1998 and with the President's Call to Service Award in 2006.

A number of health care providers from HVO sites have been fortunate to participate in the SIGN Fracture Care International training program so Dr. Zirkle's achievements have had a far-reaching impact.

Congratulations to Dr. Zirkle on this recognition of his service and commitment!

Marie O'Toole Selected as Fellow by NLN Academy of **Nursing Education**

Marie O'Toole, RN, EdD, CRRN, a senior associate dean at Rutgers School of Nursing - Camden, has been named as a Fellow in the National League for Nursing's Academy of Nursing Education. Only 16 people nationwide were honored with this distinction in 2018. The selection recognizes individuals who have made enduring, substantial contributions to nursing education, are recognized for their expertise in the field, and provide visionary leadership.

In addition to her work at Rutgers, Dr. O'Toole has been a Fulbright Specialist in Jordan and was principal investigator on a joint grant from the US and the European Commission to develop a dual-degree nursing program in conjunction with universities in Hungary and Finland.

Dr. O'Toole has been recognized as a leader at HVO for many years. Since she joined HVO in 1993, she has volunteered in Vietnam on 14 assignments, served on the Technical Advisory Group for the Vietnam Rehabilitation project, conducted a site assessment in Uganda, and served as Chair of the Nursing Education Steering Committee. Her service was honored with the President's Call to Service Award in 2006.

HVO congratulates Dr. O'Toole on this latest recognition of her many accomplishments in developing and promoting nursing education.

Nursing News

A year ago, a global campaign was launched to raise awareness about the crucial role of nurses in health care. That campaign, Nursing Now, is a collaboration between the World Health Organization and the International Council of Nurses. As part of their first anniversary activities, they have initiated the Nightingale Challenge. The challenge calls on every large employer of nurses to provide leadership and development for twenty young nurses and midwives in 2020.

The Executive Director of Nursing Now, Barbara Stilwell, will be the keynote speaker at the upcoming Global Nursing Caucus conference on April 2, which is co-hosted by Nursing Now and the Institute for Healthcare Improvement. The conference, to be held in Boston, will address "Nursing and the Health of Populations."

In Memory of Karen Stubenvoll

HVO mourns the loss of Karen Pitts Stubenvoll, MD, who passed away in October 2018 due to ALS. She had a full career in internal medicine, practicing in Tennessee, Kentucky and Minnesota. After moving to Duluth, Minnesota in 2002 she worked as a hospitalist for Essentia Health.

A Fellow of the American College of Physicians, she had academic appointments as Assistant Professor of General Internal Medicine at the University of Kentucky and Adjunct Assistant Professor of Medicine at the University of Minnesota.

Dr. Stubenvoll joined HVO in 1995 and served on three volunteer assignments in St. Lucia.

Sincere condolences are extended to her husband, Dr. Robert Stubenvoll, and their family.



Establishing a Good Mentorship

As HVO volunteers return home from their site assignments, many remain in touch with the project sites, offering guidance, sharing research literature, or Skyping to advise on diagnoses and treatment. In the last year, HVO has begun to formalize this approach by setting up "e-volunteer assignments." These are assignments for volunteers who have previously served at a site, so relationships have been established. The volunteer works with the site to set up clear guidelines as to the skills and information needed, the timeframe for the assignment, and expectations for communication, use of the skills, etc.

Monika Mann, PT, MPH has served as a mentor for Inès Musabyemariya, a Rwandan physical therapist. They met while working on The Advancement of Rwandan Rehabilitation Services Project, a USAID-funded project for HVO to provide continuing education over an intensive two-year period. Ms. Mann served as the Project Coordinator and Ms. Musabyemariya was a co-teacher for the pediatric physical therapy course.

About 1½ years after the grant project ended, Ms. Musabyemariya approached HVO about conducting a long-term follow-up of the sustainability of the procedures and practices that had been taught in her course. She planned to develop a survey and interview past participants. HVO approached Ms. Mann about taking on a mentorship role, which she gladly accepted.

Communication is crucial in a mentorship. The two therapists used WhatsApp (for quick, short communication), email (for longer messages) and Skype to engage in conversations. (While Skype, or a similar online voice/video service, allows for real time conversation, depending on the site, the quality and reliability may be questionable. It can also be difficult to schedule a time that is convenient for both participants.)

Good mentoring requires setting realistic expectations, but also providing the mentee with

independence so they can develop their skills and knowledge, with the guidance of the mentor. In this particular situation, Monika worked with Inès to help bring her idea to fruition. They worked with HVO staff to develop a budget and then scaled the project to adjust to a realistic budget (which meant they moved to a survey rather than interviews). Inès took the lead in drafting the survey and then Monika worked with her to edit and modify the questions.



Inès Musabyemariya with colleague at WCPT 2017 Poster presentation

With the submission of the surveys, Monika worked closely with Inès to analyze the data, as that was a new skill set for her. Inès again took the lead on writing up the results for HVO and the Rwanda Physiotherapy Association (AKR), with Monika assisting with editing. This analysis was very helpful, as it provided HVO with data on the long-term success of a project and it gave AKR a road map to help identify future continuing education classes that would be helpful.

Both therapists found the experience to be worthwhile and beneficial. Ms. Mann said it was a very satisfying experience that she would recommend to others. She indicated that it is important to have the right mentee who is motivated and eager to learn. She also recommended that a crucial first step is to lay the groundwork so each person is clear on their role, their time commitment, and their expectation of the mentoring experience.



Reflections from the Field

VOLUNTEERS REPORT ON THEIR ASSIGNMENTS

Bethany O'Neil, MSN, RN · Nursing Education · Tanzania

This experience has broadened the scope of my professional practice in offering me an international experience and opening my perspective of global health and well-being. I have developed a professional network with the nurses, doctors, and administrators there at Bugando hospital and I will be able to share this international experience with my students here at home. It gives me deeper insight in how to broaden my students' perspectives on global health.

Vishala Neppalli, MD · Hematology · Peru

The faculty were very proactive in bringing interesting and challenging cases for discussion in a conference. We were also able to discuss diagnostic needs and techniques and share protocols on bone marrow staining. While I was there, I introduced methods to improve co-ordination of marrow aspirate smears collection, processing and staining. It was a very professional, open and friendly environment.

George Pantely, MD · Internal Medicine · Nepal

I am always impressed that wherever I volunteer with HVO, I find highly competent, intelligent, caring, dedicated, and altruistic physicians and other health care givers who are doing an amazing job of helping the people in their country despite limited resources. The health care workers always want to learn and improve their skills and are welcoming and grateful to volunteers who come to spend a short amount of time with them. I find it enriches my life to meet these kind of people and to spend some time with them.

Ms. Jean Merz, Med, MSN, RN · Nursing Education · Cambodia

At the request of the education director, I did an all day workshop for the nurses on all aspects of burn care. Many came in on their day off (not sure if it was mandatory). Other than an isolated one or two, the nurses paid great attention all day and asked good questions. They broke up into small groups at the end of the day and worked on a case study. After 30 min, I asked if they were ready to report and, with somewhat of a panic, they all responded NO! They took it very seriously (which doesn't always happen at home) which made me glad. The next day, one of the nurses who attended was in the nursing education office and made a point to stop by my desk to thank me and tell me how much he learned. He said he works at the hospital and the satellite facility and felt he learned a lot of useful information for his work at both places.

Lia Parker, Dental Assistant · Oral Health · Nepal

When you "don't know what you don't know," how can you become better at anything? These dental assistants are doing their best with what they know. I truly believe that with the proper training they could all become more effective, engaged and more interested in their jobs.

My background with dentistry has been in a dental clinic inside a teaching hospital and this experience has allowed me to see how easily we can teach what we know and see the immediate impact even when there is a language barrier. People want to learn and be better at what they do and this is something that anyone can help with - I'm glad I had this opportunity.

Many times during our hands-on practice it was wonderful to see the moment when one of the dental assistants "got it" and then explained it to their partner and showed them how to do it. "Each one, teach one."



INFANTILE BERIBERI IN BHUTAN

Reading the Fine Print...

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Dr. Funk was visibly unsettled with our helplessness with these cases. During his first week, I was treating one of these infants with a cocktail of multivitamins as a desperate measure

and somehow managed to save his life. Dr. Funk noted the aberration and analyzed the reason behind the child's survival. He postulated that thiamine could have been the key ingredient in the multivitamin cocktail that made the difference. He searched the literature, which pointed to the possibility of these cases being "infantile

beriberi" instead of "meningoencephalitis." (Ed: Dr. Leila Srour noted that thiamine deficiency in children is called beriberi. The neurological forms of the disease are known as "dry beriberi" and one of the neurological presentations is encephalopathy).

To prove our hypothesis, we planned to administer thiamine to these children and observe for an improvement in mortality and morbidity. We adapted a protocol from an Indian study to administer thiamine to suspected patients and presented it to the entire department. Since it is a relatively cheap treatment with virtually no side effects, it was very feasible to deploy the protocol. We received the department's unanimous and instant approval. We collected record-based data of patients with the typical presentation since January 2018. We planned to collect data until the end of December, to statistically analyze the impact of thiamine administration. We collected

data on their demographic details, manner of presentation, morbidities, and mortality outcome.

Over the next two weeks we noticed that children diagnosed with "meningoencephalitis"

who received thiamine were residents and in

surviving and had fewer complications and adverse neurological sequelae. This dramatic improvement in mortality and morbidity was noted by other consultants department. We shared our observations and protocol with pediatricians at other hospitals in Bhutan to follow.

In January 2019 we analyzed the 2018 data and found that, of the 51 children who had presented with "meningoencephalitis" in 2018, 19 children had not received thiamine (January-July), and 32 had received it (August-December). The baseline characteristics, manner of presentation and our management was the same in these two cohorts, except for the administration of thiamine in the latter. We discovered that children in the thiamine cohort had suffered less shock, acute kidney injury, respiratory failure and metabolic acidosis, all of which were statistically significant. What astounded us was the fact that none of the children in the thiamine-cohort had died whereas 73.7% of children had died in the no-thiamine cohort.

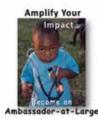
Our findings seem to support that all these children had infantile beriberi instead of meningoencephalitis. We postulate that the dietary practices in Bhutan, with the consumption of polished milled rice as a staple diet, coupled

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JDWNRH Pediatric Department

Photo courtesy of Mark Lee



INFANTILE BERIBERI IN BHUTAN

with the habitual consumption of tea and betel nut -- both of which contain elements that destroy thiamine in the diet -- cause thiamine deficiency in pregnant and lactating mothers. These mothers then give birth to children who are thiaminedeficient. The babies remain thiamine-deficient during the initial 6-month exclusive breastfeeding period since the mother's breastmilk contains insufficient thiamine. In the presence of an acute illness, infants' thiamine levels plummet and they present acutely with infantile beriberi.

There are previous reports of outbreaks of peripheral neuropathy in school children who were fed a thiamine-deficient diet in boarding schools, which support the presence of thiamine deficiency in the Bhutanese population. There are reports in the literature of infantile beriberi from Israel, Laos, Cambodia, Thailand and Myanmar. While it was thiamine-deficient soy milk in Israel, the rest of the Southeast Asian countries share a similar risk profile to Bhutan. There is also considerable literature, which has proven the benefit of thiamine in the treatment of critically-ill children with sepsis, shock and metabolic acidosis.

We still need to prove our empirical findings by testing thiamine levels in children who present with acute encephalopathy, which is a challenge because these tests are expensive and not readily available in most parts of the world.1 For now, thiamine administration to children with acute encephalopathy as well as other critically-ill children has become the standard-of-care in our PICU. We have also received anecdotal reports of similar success from our pediatricians from the other hospitals in Bhutan.

1Dr. Leila Srour noted, "To confirm the diagnosis, special and very expensive blood tests should be conducted. However, these tests are only available in a few centers in the world. The samples must be taken and sent with special preparations (very deep freezing) to preserve the elements to be tested. Conducting these tests will require international collaborations. With the recent presentation [by Drs. Pradhan and Funk], I think there will be new support for this research. These results could lead to public health intervention to prevent this disease, saving infants' lives and protecting their brains.'



Drs. Funk & Pradhan presentation at GTP

Presentation, Response and Impact

Dr. Funk and I submitted our study, "Acute Encephalopathy in children admitted to PICU of National Referral Hospital in Bhutan," to the Annual Conference of German Society of Tropical Pediatrics and International Child Health (GTP) and were invited for an oral presentation. For financial support, I applied to HVO for the Wyss Scholarship for Future Leaders in Global Health, and I was delighted to receive funding.

The Wyss Scholarship funded my travel to the University of Witten in Germany, where Dr. Funk and I took turns presenting our study to experts in the field of tropical pediatrics, global child health, nutrition, and infectious diseases from over 30 countries. We were bombarded with questions during the post-presentation panel discussion, just the beginning of a truly exhilarating yet humbling experience for us.

Various delegates came up to us over the next two days during the coffee breaks, lunch and dinner, excitedly asking us how we came across this discovery, the details of our literature review, queries on Bhutan, and commendations on our teamwork and successful collaboration. We even received a few offers to pursue the topic further in the form of PhDs! Of particular note was everyone's constant query regarding the nature of our collaboration. We lost no time in acknowledging HVO's contribution in bringing Dr. Funk to Bhutan, which led to this significant study, and HVO's generosity in making it possible for us to present our work in Germany. continued on next page



INFANTILE BERIBERI IN BHUTAN, MEMBERS IN THE NEWS

Reading the Fine Print...

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We gladly shared HVO's website and many [people] expressed their interest in contacting HVO for volunteer opportunities.

The icing on the cake came at the conclusion of the conference when the Chairman of GTP announced that our study was unanimously adjudged the winners of the Helmut Wolf Award for Best Presentation by the Scientific Panel of the Conference. We received citations and a monetary prize of 500 Euros, which we shared with our pediatric department. In our acceptance speech we thanked HVO for enabling our collaboration which suited the theme of the Conference, "Research, Education and Practice."

We plan to present our findings to Bhutan's Ministry of Health with the hope that pregnant and lactating women will be supplemented with thiamine in addition to the current iron, folic acid and calcium regimen, so that we can eliminate infantile beriberi from our country for good.

While KGUMSB and JDWNRH, as well as the Department of Pediatrics, remain thankful to HVO for the continuing collaboration in fulfilling the needs of sub-specialist residency training, the impact of this collaboration is not always readily visible or measurable. The success of this present collaboration, therefore, proves that such collaboration not only facilitates the transfer of knowledge and skills from volunteer experts to local residents and faculty but also contributes directly to reducing morbidity and mortality in the partner institutions. The collaboration further contributes to the development of a culture of research and evidence-based practice in our nascent Residency program.



Drs. Funk & Pradhan holding the Helmut Wolf Award citation

Samer Attar Honored with AAOS Humanitarian Award

At the recent meeting of the American Academy of Orthopaedic Surgeons, Samer Attar, MD, was honored with the 2019 Humanitarian Award for his selfless commitment to providing assistance to people in some of the most difficult situations around the globe. Since 2013, he has made multiple visits to Syria with the Syrian American Medical Society, often working for several weeks at a time in underground hospitals that were constantly being bombed. In July 2016, he had been working in Aleppo and was the last American physician to depart, when the city was sieged. In addition to working in field hospitals in areas that are difficult to access, Dr. Attar has been a tireless advocate for the Syrian people, writing op-eds, testifying at the UN, meeting with US government officials and Congressional members to bear witness to the atrocities he has seen.

An associate professor of orthopaedic surgery at Chicago's Northwestern University, Dr. Attar has provided care at Ground Zero after 9/11, served in Liberia with the International Medical Corps during the Ebola outbreak, and volunteered with New York City Medics in Mosul, Iraq. He has worked with Doctors Without Borders in Jordan, and served with HVO on two assignments in Bhutan. Dr. Attar also served as HVO's project director for Myanmar, where he conducted the orthopaedic assessment.

In accepting the award, Dr. Attar said that he hoped it would raise awareness of his colleagues in Syria "who continue to risk their lives and brave bombardment in order to care for the sick and injured."

Congratulations to Dr. Attar on this recognition of his dedication and selfless commitment!

...to the following donors for their generous financial support:

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