Making Prevention a Priority in Global Oral Health

The World Health Organization states that oral health is essential to general health and quality of life. However, tooth decay is the most widespread chronic disease worldwide, with untreated tooth decay having a prevalence of over 40% for all ages.

While most oral diseases are not fatal, oral health is a neglected issue in the global health arena.

Many of the preventive measures taken in high-income countries are not feasible in poorer areas of the world. For instance, a broad-spectrum prevention effort like water fluoridation requires costly water treatment and delivery systems.

Regular dental cleanings are another element of preventive care, but these visits are equipment- and material-intensive, and it is neither easy nor affordable to set up a dental clinic.

Education about dental hygiene is one of the few preventive approaches available in resource-constrained settings, but even proper hygiene relies on the availability of clean water, toothbrushes, dental floss, and toothpaste.

Unfortunately, without preventive mechanisms in place, and materials needed to restore teeth by drilling and filling cavities, dental care is limited and many people live with a lifetime of chronic dental pain.

Over time teeth become non-restorable leading to treatment by extraction. Tooth extraction results in a lower quality of life due to limitations in biting, chewing, smiling and speaking.

The disparity between oral health challenges and solutions is partly what captured the attention of Elizabeth Shick, DDS, MPH, Assistant Professor of Pediatric Dentistry, School of Dental Medicine, University of Colorado Anschutz Medical Campus. She became interested in global oral health during her dental and public health training at the University of North Carolina, Chapel Hill.

She explains, “Right now, the priority in oral health care is moving to prevention. We have established that kind of care here in the U.S., but it does not exist in much of the world. Dental care in other countries is limited to acute emergency-based care. But the reality is that periodontal disease, (Continued on page 3)
With fair skin, dark brown hair and light eyes, it comes as no surprise Anne-Marie Rick is an Irish Lass. Born in Ireland, she moved to the United States with her family at the age of 3. And, ever since she can remember she has harbored a love for animals. So much so that at the age of 6 she announced her dream of being a veterinarian when she grew up.

Volunteering had always been an activity she shared with her family and an activity she continues to this day. During her summer break between her junior and senior years at Notre Dame, Anne-Marie traveled to Calcutta, India for ten weeks to volunteer at the Missionaries of Charity Nirmal Hriday Hospice. At 21, Anne-Marie had no idea this experience would change her destiny.

Anne-Marie was thrust into an environment unlike any she had seen or experienced before. People whose families could or would no longer take care of them - medically, financially and emotionally - were often left at the train station in Calcutta, many on the verge of death.

The sisters and volunteers at the hospice would gather up as many of these people as they could to take back to the hospice. The goal was to give these forgotten people the dignified and respectful death they deserved.

The hospice patients – some in their 20’s and 30’s - were dying from diseases such as TB, leprosy, HIV and bridal burnings. Anne-Marie helped care for the patients, working side by side with the sisters and volunteers getting to know each patient, and remained by their sides even as they took their last breath.

These 10 weeks impacted Anne-Marie so strongly that she could not shake the desire to help other people in her own community and around the world. Anne-Marie returned to Notre Dame attempting to pick up where she left off but quickly realized nothing was as she had left it. She began the process of completing medical school applications.

The application process was a success and after graduating from Notre Dame, Dr. Rick attended Johns Hopkins University where she completed her MPH and MD.

“I felt the Global Health Track would give me the best opportunity to meaningfully contribute globally by doing research and clinical work.”

Anne-Marie Rick, MD, MPH, Global Health Fellow, Center for Global Health

Because Anne-Marie wanted to pick a specialty where she could do the greatest amount of good by combining medicine and public health, she chose the most vulnerable population with Pediatrics.

In her search of a Pediatric residency program, she was drawn to the Global Health Track at the University of Colorado and Children’s Hospital Colorado both on the Anschutz Medical Campus.

Anne-Marie shares, “I felt the Global Health Track would give me the best opportunity to meaningfully contribute globally by doing research and clinical work.” Anne-Marie was a member of the first cohort of global health track residents, who graduated this past spring.

While completing her training Anne-Marie met her husband, a surgery resident; Alessandro. They married this year on August 27th in Rome, Italy; Alessandro’s country of birth.

For the next year Anne-Marie will be completing a Global Health Fellowship at the Center for Global Health under the tutelage of Edwin Asturias, MD, Director of Latin American Projects at the Center and Associate Professor of Pediatrics, Section of Pediatric Infectious Disease at the University of Colorado School of Medicine and Epidemiology at the Colorado School of Public Health both on the Anschutz Medical Campus.

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caries [cavities], and oral cancers can all be addressed through prevention efforts.”

When Dr. Shick began working with students at the University of Colorado School of Dental Medicine in 2009, she was certain she wanted to facilitate a global learning experience, but she wanted to avoid a “voluntourism” type of project.

Voluntourism is a practice where physicians and other healthcare providers travel abroad to deliver healthcare services on a short-term basis. Instead, Dr. Shick wanted to establish a more sustained and impactful presence in a single region.

In 2012, the Center for Global Health was establishing a clinic in the southwest Trifinio region of Guatemala. When Dr. Shick learned about the clinic, called Centro Desarrollo Humano (Center for Human Development), her attention was piqued. She elaborates, “In the past, global oral health has followed a model of voluntourism. I think people in academics and non-profit work are trying to change that. There has been a paradigm shift to community-based, sustainable programs.”

It was Dr. Shick’s goal to work in concert with medical doctors to leverage resources and experience to provide the best care. “I think the field of medicine has been doing a lot of great sustainable global health work and we can learn a lot from that. Using the Trifinio clinic allows us to share resources and meet the challenges that are common to all global health efforts,” she continues.

Despite collaborating to make the most of limited resources in the Trifinio area, Dr. Shick has had to confront the reality that awareness of dental care is nonexistent in this region. “A lot of underserved communities don’t have any knowledge about how to care for their teeth,” she said. “The little tiendas [shops] in the rural areas may not sell toothbrushes or fluoridated toothpaste, and certainly no dental floss.”

It became clear there were opportunities for community education, but Dr. Shick also wanted to understand the prevalence of oral health issues among children in the Trifinio area.

In 2014, the University of Colorado School of Dental Medicine donated dental chairs, dental instruments, and a new autoclave to sanitize instruments to outfit the Centro Desarrollo Humano. Using this space, Dr. Shick conducted a dental screening of over 50 elementary-aged children in the clinic catchment area. “When we did our first screening, 96% of kids had tooth decay requiring fillings or extractions,” she stated. “A few months later, we returned and extracted 108 teeth.”

Since then, Dr. Shick has conducted several trips to the Trifinio area. She brings new autoclave to sanitize instruments to outfit the Centro Desarrollo Humano. Using this space, Dr. Shick conducted a dental screening of over 50 elementary-aged children in the clinic catchment area. “When we did our first screening, 96% of kids had tooth decay requiring fillings or extractions,” she stated. “A few months later, we returned and extracted 108 teeth.”

Since then, Dr. Shick has conducted several trips to the Trifinio area. She brings CU Dental Medicine students per trip.

“So far we have done direct patient care in the clinic. We go three to four times per year, and each time we see as many adults and children as we can,” she says.

“In addition to the screenings, we also started a school-based program modeled after WHO guidelines. The School of Dental Medicine provides the school children with donated toothbrushes and toothpaste, and we do school assemblies about oral health. This includes demonstrations of proper brushing, flossing, and basic information about teeth and dental care. We have also instructed teachers to have all children brush their teeth once a day while at school.”

The trips to Guatemala have garnered a lot of interest from students, so much so that Dr. Shick and colleagues at the School of Dental Medicine have developed a new elective course, “Introduction to Global Health,” specifically designed for dental medicine students who plan to travel to Guatemala.

This 5-class elective, which launches in October 2016, will address topics like global burden of oral disease, building sustainable global health programs, quality of life issues, cross-cultural adaptability, and cultural awareness.

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This new course will inform students about the broader challenges of oral health care, and prepare them for the challenging conditions of working in another country.

“They learn a lot about low-resource dentistry while they’re in Guatemala,” explains Dr. Shick, “and we want to lay the groundwork for that in the course. We are teaching them how to provide a really high standard of care in a low-resource setting. This will be important for their careers whether or not they travel abroad to provide care.”

Oral health equity and access to care here in the U.S. is also an issue, and Dr. Shick hopes that students will return after their travels with a fresh perspective on cultural diversity and underserved populations.

She continues, “I think it’s rewarding to be able to impact a community that has no access to dental care. Living with those toothaches and those dental problems is a fact of life for many.”

Guatemala has a population of 15 million, and has only 100-500 dentists and oral health personnel for every 1 million people.¹

Furthermore, this scant workforce is centrally located in urban areas. Not only is the workforce limited, but their training does not focus on disease prevention or tooth restoration.

Dr. Shick explains, “There is a disparity in professional dental education around the world. In a lot of countries, schools of dental medicine train dentists to be excellent extractors out of necessity. These dentists can’t afford the materials they need for restorative care or even a dental chair needed to perform dentistry, which is several thousand dollars.”

In the absence of the infrastructure and resources needed to operationalize preventive care, Dr. Shick and her students will continue to provide community-based education, and regular screenings at the dental clinic in the Centro Desarrollo Humano.

In fact, Dr. Shick hopes to increase the number of visits conducted each year. By exposing the children in the community to proper self- and professional-care through education programs and regular screenings, Dr. Shick hopes to encourage a shift toward prevention in these rural underserved communities.


Learn more about Dr. Shick’s work, contact her at elizabeth.shick@ucdenver.edu

♦By Molly Terhune
One of the projects she will be working on is the continuation of her group B streptococci (GBS) project in Guatemala. GBS is a type of bacteria found in the lower intestine and vagina of 10-35% of all healthy, adult women.

This bacteria can be transmitted to babies as they pass through the birth canal and may cause infection if the baby swallows or inhales the bacteria. While infection is known to cause one of every five neonatal deaths globally, little is known about GBS’s epidemiology and risk in low-income countries.

Therefore, to find out more, Anne-Marie did a cross-sectional study in 2015 at a public hospital in Guatemala City enrolling women who were at least at 35 weeks’ gestation. She found that of the 896 pregnant women tested, 155 were GBS colonized.

A person whose body carries group B strep bacteria but who does not show signs of infection is said to be “colonized.” She found that group B strep was associated with women having a previous infant with poor outcomes and their increasing maternal age. Four of the GBS exposed infants had early onset neonatal sepsis, or infection of the blood.

GBS infection at birth can cause long-term medical problems, including hearing or vision loss, varying degrees of physical and learning disabilities, cerebral palsy or even death. Anne-Marie shares, “Now that we have established that GBS is present in a significant number of pregnant Guatemalan women, we would like to establish if it is actually a cause of the high neonatal sepsis rate in Guatemala - as studies in other countries would suggest. This understanding is important as Guatemala develops strategies to reduce its neonatal mortality rate.”

“I felt the culture and beliefs of family medicine resonated with me. It is population health driven, covering specialties from top to bottom. I wanted to practice medicine where I could build relationships with the patients, their family and their community.”

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Michael Matergia, MD, Global Health Fellow, Center for Global Health

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When Michael Matergia arrived to our interview for this article a few minutes late, he explained that he had been on the phone with Google tech support. Apparently, there had been a ‘glitch’ or as tech support explained, an ‘implosion’ that had caused the loss of 50% of his data from a project he has been working on in India since 2007. Luckily, Michael is tech savvy enough that he was able to retrieve the lost data and the big smile on his face showed his immense relief.

Michael grew up two hours outside of New York City in the heart of the Poconos. He is from the small town of Stroudsburg, Pennsylvania, where, the “Voice of the Poconos”, radio station WVPO-840 AM has called home since 1947.

After finishing his bachelor’s degree at the University of Pennsylvania, Michael’s wife, Denna, who he has known since high school, proposed the idea of spending a few weeks in the Darjeeling region of India volunteering. Michael’s initial reaction, “No, I can’t handle spicy food.”

After building up his tolerance for spicy food with chicken wings with varying degrees of spicy sauces, Michael and Denna headed to Darjeeling to volunteer for six weeks for an NGO near the Makaibari Tea Estate, a local tea plantation. Upon arrival, a woman greeted them with “hello and welcome” and in what felt like a few minutes later departed with a “see you later.”

Feeling like they had literally been dropped into another world with no direction nor organization, Denna, an elementary school teacher, took matters into her own hands and walked down to the local school to ask if they needed any help. What she found was a classroom of thirty 3 to 6 year olds who had been left there. Their teacher showed up once a month to collect a paycheck.

These students were the children of the local tea plantation workers. Michael and Denna took this opportunity to help the children by giving them academic structure. Denna became their volunteer teacher and Michael taught health lessons on such topics as how to brush your teeth and how to wash your hands.
Are you a student looking for a global health project and mentor?

Join us from 2 to 4 pm on Friday, October 14, 2016!

Faculty who are looking for mentees will be sharing their projects.

Hensel Phelps Auditorium East, Research 1 North Building, 12800 East 19th Avenue, Aurora, CO 80045
A few weeks in India evolved into a full twelve months. Michael and Denna had transformed the classroom. They had gained five more students while serving as teachers. They opened a library.

Mercy Corps built a structure on land donated by the tea plantation and with donations from family and friends totaling $5,000, Michael and Denna stocked the library with books and resources. They enjoyed the children’s reactions—big eyes filled with amazement!

But, Michael and Denna had to return to their lives in the States. And, Michael had admission at Harvard Medical School waiting.

Michael, chose the specialty of family medicine during his time at Harvard. “I felt the culture and beliefs of family medicine resonated with me. It is population health driven, covering specialties from top to bottom. I wanted to practice medicine where I could build relationships with the patient, their family and their community,” shares Michael.

While in medical school, Michael used his Harvard University Sheldon Traveling Fellowship award to return to Darjeeling for almost a year. He and Denna felt they had family there and wanted to continue the work they had started.

They created Broadleaf, a 501c3 non-profit. Michael and Denna had developed a program called Comprehensive Health and Hygiene Improvement Program (CHHIP), and Mercy Corps rose to the occasion once more helping Michael implement the program into seven schools impacting 350 kids.

To keep Broadleaf and CHHIP going Michael and his younger brother did a successful bike tour from Kathmandu to Darjeeling to raise money.

Michael finished medical school and moved to Denver where he finished his family medicine residency at St. Joseph’s Hospital this past spring. He began his fellowship at the Center for Global Health on August 1st and will work as a mentee under the leadership of Eric Simoes, MB, BS, DCH, MD, Professor of Pediatrics, Section of Pediatric Infectious Disease at the CU School of Medicine on the AMC.

His project CHHIP is at the stage where data analysis will be dominating Michael’s work as he has now implemented the program into 12 schools and 550 kids. His next year as a fellow will consist of taking a couple of courses at the Colorado School of Public Health, doing clinical work at St. Joseph’s Hospital and exploring opportunities to influence public policy in the Darjeeling region by refining his intervention package, expanding the training program and implementing an evaluation system for a child mental health program.

Over the next year, their field work will take Anne-Marie and Michael 9,563 miles apart - as the crow flies. Anne-Marie is looking forward to returning to Guatemala City to gather more data and start the development and implementation of preventative measures to benefit the health of women and their babies. Michael will continue to build his relationships in the region of Darjeeling; where his second, honorary family resides – giving back and strengthening the foundation of health care for the local children and their families.

The Center for Global Health is pleased to be welcoming two excellent fellows, Anne-Marie and Michael!
All Students, Faculty, Staff, Community Members and Leaders with an interest in global health work are invited to attend.

Schedule below; see who is presenting and their projects. 8:20 am — 12:30 pm, Hensel Phelps Auditorium East, Research 1 North Building, 12800 East 19th Avenue, Aurora, CO 80045

8:20 am — Welcome

Pediatric Global Health

8:30 am – “Cultural Relevance of Fine Motor Screening in a Rural Guatemalan Community”
Abigail Angulo, MD, MPHc, Fellow, Developmental-Behavioral Pediatrics, Children’s Hospital Colorado

8:45 am – “Influence of Breastfeeding Practices on HIV-1 Susceptible T Cells in HIV – 1 Exposed Ugandan Infants”
Elizabeth McFarland, MD, Professor and Section Head, Pediatrics Infectious Diseases, School of Medicine, University of Colorado Anschutz Medical Campus and Medical Director, Children’s Hospital Colorado HIV Program and Pediatric Infectious Disease Outpatient Clinic

9:00 am – “Rapid Active Seroprevalence Surveys as a Tool to Measure Norovirus Disease Burden in Resource-limited Settings”
Daniel Olson, MD, Assistant Professor of Pediatrics, Section of Pediatric Infectious Disease, School of Medicine CU AMC

Roberto Delgado-Zapata, MD, MPHc, Celgene Global Health Fellow, Center for Global Health, Colorado School of Public Health, CU AMC

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Women and Adult Global Health

9:30 am – “Understanding Knowledge, Attitudes and Practices of Exclusive Breastfeeding at Dhulikhel Hospital, Nepal”
Kara Blaisdell, Bijan Ghaffari and Allison Strauss, Students, School of Medicine, and Cristianna Ruple, Student, Child Health Associate/Physician Assistant, School of Medicine, CU AMC

9:45 am – “Group B Streptococci Colonization in Pregnant Guatemalan Women: Prevalence, Risk Factors and Vaginal Microbome”
Anne-Marie Rick, MD, MPH, Global Health Fellow, Center for Global Health, Colorado School of Public Health, CU AMC

10:00 am – “Adherence to HIV Prevention During and After Pregnancy in Urban Zambia: The Neglected Role of Intimate Partner Violence”
Karen Hampanda, PhD, MPH, Postdoctoral Fellow, Colorado HIV Research Training Program, Department of Community and Behavioral Health, Colorado School of Public Health, CU AMC

10:15 am – “Cohort Effect in HCV Infection, Morbidity and Mortality: Results from 7 African Countries”
Helen Nde, MPH, Epidemiologist, Center for Disease Analysis, LLC

10:30 am – Break

Training and Education

10:45 am – “Health Worker Acceptability of a mHealth Solution for PMTCT in Tanzania”
Kristen Daly, MPHc, Department of Community and Behavioral Health, Colorado School of Public Health, CU AMC

11:00 am – “Establishing a Need for Global Health Training in Prospective and Current Internal Medicine – Pediatric Residents at the University of Colorado”
Rebecca Kamins, MD, Medicine-Pediatrics Resident, School of Medicine, CU AMC

11:15 am – “Telehealth Based Community Health Nurse Education in Rural Guatemala”
Kelly McConnell, MD, Pediatrician, Carson City, Nevada

11:30 am – “Development of a Subspecialty Cardiology Curriculum for Pediatric Registrars in Malawi – Implementation of a Long Distance Hybrid Model”
Laura Newberry, MD, FAAP, DTM&H, Consultant Pediatrician, College of Medicine, Blantyre, Malawi

11:45 am – “Birth Attendant Training to Reduce Neonatal Mortality in Loreto, Peru: A Program Evaluation”
Laura Warner, MD, MPH, Medical Director, SET Family Medical Clinics and Global Health Initiatives, Centura Health – Community Health

12:00 pm – Presentation of the 2016 Excellence in Global Health Award

12:30 pm – Conclusion
Meet the 2016 Excellence in Global Health Award Recipients: Theodore C Ning, MD, FACS & Constance C Ning, RPT, MA!

Connie and Ted met at Northwestern University Medical School where she completed her physical therapy degree and he his medical degree. They were married in his senior year and dreamed of opportunities to work as a couple in Latin America.

Dr. Ning was drafted after his internship and sent to Vietnam as a US Army doctor. During this unique year, he was involved with many rural development projects including orphanage support. After his return, Connie and Ted helped start an international adoption agency to support orphanages in Vietnam.

Connie later received a Master’s Degree in Counseling from the University of Northern Colorado and a Diploma in Marriage and Family Therapy from the Karl Menninger Institute. Ted completed his urology residency at the University of Colorado Health Sciences Center. He had a private practice but continued his interest in the urology residency training program over many years eventually attaining the rank of Clinical Professor in the Department of Surgery (Urology) which he still holds.

In 1988, Ted and Connie returned to Vietnam and after seeing the war-related poverty of the country founded Friendship Bridge (FB). The organization began as a medical relief project with over 15 projects. Over 400 American volunteers donated their time to participate in these projects. Connections were made between Hanoi and Saigon and major medical centers in the US. Of the original projects, 5 continue to operate today.

By 1992, FB changed its focus to rural childhood malnutrition was overwhelming in Vietnam and was the center of development. In looking for income generation models to sustain programs, they discovered the Grameen Bank in Bangladesh and began a replication project in Vietnam. FB combined the education of women in preventive health (including malnutrition) and the loan program. With Nike, Inc. funding, the Women’s Microcredit and Education program reached self-sustainability with 5300 clients by 2000. This program has been used extensively throughout Vietnam.

In 1998, FB created a similar program in the Western Highlands of Guatemala within rural Mayan communities. The project currently has 29,000 women borrowers. Like the Vietnam microcredit project, this project provides non-formal education (business training, women’s empowerment, health topics, leadership training, et al.) to the borrowers.

In 2007, Ted and Connie started another organization, Starfish One By One. This program is creating the next generation of women leaders. Upon completion of primary school, girls begin a special weekly program. In groups of 15, they meet with a Mayan mentor who helps them create goals. To date 105 girls have graduated from high school. Many are enrolled at nearby universities. This is an incredible achievement when you realize that many of their mothers have not attended school and do not speak Spanish.

Ted received an Honorary Doctorate in Humane Letters by the University of Colorado Board of Regents in 2007. He was also Board member during the creation of the Center of Global Health in 2004 and has been a frequent presenter at previous Global Health Conferences.

The purpose of this award is to recognize and publicly honor those individuals, institutions or organizations based in the state of Colorado that have made a significant and exemplary contribution to the sustained improvement of the health of multiple populations over an extended period of time in a global health setting.
November 16, 2016
12-1 | ED2 South, 2306
Anschutz Medical Campus

Francisco la Rosa, MD, Associate Professor, Department of Pathology, School of Medicine, University of Colorado Anschutz Medical Campus

*Telehealth and Telemedicine: A New Paradigm in Global Health*

December 7, 2016
12-1 | ED2 South, 2201
Anschutz Medical Campus

Beth Fischer, MCRP, Acting Chief of Party, IntraHealth

*mHealth Supports Community Health Workers in Uttar Pradesh, India*

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