

2016

Global Health Symposium



Center for Global Health
WHO Collaborating Center
Colorado School of Public Health
<http://globalhealth.ucdenver.edu>



Schedule

8:20 am – Welcome

Pediatric Global Health

8:30 am – “Cultural Relevance of Fine Motor Screening in a Rural Guatemalan Community”

Abigail Angulo, MD, MPH Candidate, 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, University of Colorado Anschutz Medical Campus

9:15 am – “Big Decisions: Piloting an Adapted Abstinence-plus Sexuality Curriculum for Rural Guatemalan Adolescents”

Roberto Delgado-Zapata, MD, MPH Candidate, Celgene Global Health Fellow, Center for Global Health, Colorado School of Public Health, University of Colorado Anschutz Medical Campus

October 14, 2016

8:20 am - 12:30 pm

University of Colorado
Anschutz Medical Campus

Research 1 North Building
Hensel Phelps Auditorium East

12800 East 19th Avenue
Aurora, CO 80045



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, University of Colorado Anschutz Medical Campus

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, University of Colorado Anschutz Medical Campus

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, University of Colorado Anschutz Medical Campus

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, MPH Candidate, Department of Community and Behavioral Health, Colorado School of Public Health, University of Colorado Anschutz Medical Campus



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, University of Colorado Anschutz Medical Campus

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



Abstracts

Cultural Relevance of Fine Motor Screening in a Rural Guatemalan Community

Abigail S Angulo, MD, Maureen Cunningham, MD, MPH, Gretchen Domek, MD, MPhil, Ryan Asherin, MA, Ann Reynolds, MD, Susan Hepburn, PhD, Sandra Friedman, MD, MPH, and Ayelet Talmi, PhD



Background/Objective: Previous research suggests that the Ages and Stages Questionnaire – 3rd ed. (ASQ) may not be culturally relevant for assessing development in young children in Trifinio, a rural Guatemalan community. Nearly 40% of abnormal screenings were in the fine motor domain (FMD). We hypothesize that the elevated abnormal FMD scores are related to lack of exposure to the toys and objects assessed in the questionnaire.

Methods: The FMD scores of Guatemalan children (n=56) were compared with Spanish and English speaking children screened at 12, 24, and 36 month well-child checks in Denver, Colorado. The groups were matched on age, gender, and socioeconomic status. Item analysis will be conducted to evaluate similarities and differences on items across the 3 groups.

Results: Of the children with FMD scores, 43% were male. In the Guatemalan group, nearly 15% of 12-month-old children, nearly 62% of 24-month-old children, and none of the 36-month-old children scored as abnormal in FMD. Overall, both the Spanish and English FMD from Denver have lower rates of abnormal scores than the Guatemalan sample. At 24 months, only 7.7% of children in both of the Denver groups scored in the abnormal range on the FMD compared to nearly 62% in the Guatemalan sample.

Conclusions: The findings support the hypothesis that questions pertaining to certain toys or objects may not be culturally relevant to the children in Guatemala, likely due to lack of exposure. Compared to the 24 month questionnaire, there are fewer 12 and 36 month FMD questions about toys or objects that are unavailable in this community. As all of the Guatemalan children passed FMD at 36 months, this lack of exposure may not be significantly impacting their development. The English and Spanish groups from Colorado appeared to have similar rates of abnormal ASQs that were far lower than the Guatemalan sample, suggesting language alone does not account for differences in FMD scores. Implications for screening, identification, and intervention with young children in Guatemala and Colorado are discussed.

Influence of Breastfeeding Practices on HIV-1 Susceptible T Cells in HIV-1 Exposed Ugandan Infants

Elizabeth J McFarland,^{1,8} Tina M Powell,¹ Carolyne Onyango-Makumbi,³ Weiming Zhang,⁴ Kelsey Melander,² Prossy Naluyima,⁵ Samuel Okurut,⁵ Michael A Eller,^{6,7} Mary Glenn Fowler,^{3,9} and Edward N Janoff^{2,8,10}

Department of ¹Pediatrics and ²Medicine, University of Colorado Anschutz Medical Campus; ³Makerere University-Johns Hopkins University Research Collaboration, Kampala; UG; ⁴Department of Biostatistics and Informatics, Colorado School of Public Health, University of Colorado Anschutz Medical Campus; ⁵Makerere University Walter Reed Project, Kampala, UG; ⁶U S Military HIV Research Program, Walter Reed Army Institute of Research, Silver Springs, MD; ⁷Henry M. Jackson Foundation for the Advancement of Military Medicine, Bethesda, MD; ⁸Mucosal and Vaccine Research Program Colorado (MAVRC), Infectious Diseases; ⁹Johns Hopkins University School of Medicine, Baltimore, MD; ¹⁰Denver Veterans Affairs Medical Center, Denver, CO.

Background. Among HIV-1-exposed infants, mixed breastfeeding (BF) is associated with higher risk of postnatal HIV-1 transmission than exclusive BF, but the mechanisms of this differential risk are uncertain.

Methods. We classified 100 HIV-1-exposed, Ugandan infants receiving breast milk only as exclusive BF (EX), and those with introduction of other foods as non-exclusive BF (NX). We prospectively evaluated circulating T cell maturation, intestinal homing ($\beta 7^{\text{hi}}$), activation, and HIV-1 co-receptor (CCR5) expression over one year. Mothers were counseled to exclusively BF through 24 weeks. and absolute counts of $\beta 7^{\text{hi}}$ CM CD4⁺ and CD8⁺ T cells, including the HIV-1-targeted cells co-expressing CD4⁺ $\beta 7^{\text{hi}}$ /CCR5⁺, as well as increased activation.

Results. Among CD4⁺ and CD8⁺ T cells, the expression of memory, activation and CCR5 markers increased rapidly from birth to week 2, peaking at week 6 whereas cells expressing the intestinal homing marker increased steadily in the central memory (CM) and effector memory (EM) T cells over 48 weeks. At 24 weeks, when feeding practices had diverged, NX infants showed increased frequencies.

Conclusions. The T cell phenotype associated with susceptibility to HIV-1 infection (CCR5⁺, gut-homing, central memory CD4⁺ T cells) was preferentially expressed in non-exclusive breast feeders, a group of infants at increased risk for HIV-1 acquisition.

Abstracts continued

Rapid Active Seroprevalence Surveys as a Tool to Measure Norovirus Disease Burden in Resource-limited Settings

Daniel Olson, Molly M Lamb, Alma Zacarias, Maria Renee López, Alejandra Paniagua, Gabriela Samayoa-Reyes, Ricardo Zambrano, Sergio Rodríguez, Celia Cordon-Rosales, Edwin J Asturias

Background: Cost-effective surveillance systems capable of accurately detecting acute gastroenteritis (AGE) are necessary to estimate the burden of pathogens such as norovirus (NoV) and to estimate the potential effectiveness of future vaccines.

Methods: We used a 2-stage cluster design (30 clusters of 7 households) to enroll children age 0-17 years in a rural, resource-limited, coastal region of Guatemala into two parallel surveillance systems to estimate the burden of NoV AGE. In the prospective Participatory Surveillance System (PSS) arm, 207 households with 483 children were provided a smartphone with a symptom diary application and asked to submit weekly reports of AGE symptoms. Subjects reporting 3+ days of vomiting/diarrhea or 1+ day of both were visited and asked to provide rectal or stool swabs for NoV PCR. In the Rapid Active cross-sectional Surveys (RAS), 377 children from 209 households (cycle 1), and 369 children from 210 households (cycle 2) from the same community were surveyed for AGE within the preceding 7 days and tested for NoV via PCR, regardless of symptoms.

Results: In the PSS arm, 50 children reported AGE symptoms during 362 person-years of observation (13.8 cases/100 person-years), and 9 of 34 (26%) tested were NoV+. In RAS Cycles 1 (Oct-Nov 2015) and 2 (Jan-Feb 2016), 53 (14%) and 29 (8%) children reported AGE symptoms in the preceding week and 6/39 (15%) and 5/24 (21%) tested were NoV-positive, respectively; the asymptomatic: symptomatic NoV ratio was 3.2:1. In logistic regression models adjusted for sex, younger age was a significant predictor of AGE symptoms, but was not associated with NoV+ AGE.

Conclusions: Our data demonstrate a large burden of NoV+ AGE and asymptomatic NoV shedding in this Guatemalan community. The more cost-effective RAS cross-sectional surveys provided comparable AGE incidence and NoV infection rates to the smartphone-based PSS active surveillance cohort.

Big Decisions: Piloting an Adapted Abstinence-plus Sexuality Curriculum for Rural Guatemalan Adolescents

Claudia Luna-Asturias, LGSW; Saskia Bunge-Montes, MD MPH; Roberto Zapata-Delgado, MD; Stephen Berman, MD; Edwin J Asturias, MD

Background: Young adolescent reproductive health education in rural Guatemala is limited. As a result, 4 of every 10 girls 13-19 years old report being sexually active and 3 out of 10 girls under 19 have already had at least one child.

Objective: To pilot the appropriateness, acceptability and feasibility of an adapted version of Big Decisions (BD), an abstinence-plus sexuality education curriculum for adolescents at a high school in rural southwest Guatemala.

Methods: After approval from local school and community leaders, students from *Los Encuentros* High School received the 10 lesson-curriculum during one week in June 2016. Pre and post surveys, focus groups and in-depth interviews with key informants were used to evaluate the suitability and utility of the program.

Results: Seventy-seven adolescents aged 13-18 years old participated in the program, 51% were female. Seventeen students (23%) reported already having had sex. Of these, 16% had sex for the first time before age 15. Two fifths (44%) reported they didn't know where to obtain a condom if they needed one. Pre and posttests results showed students' increasing their agreement to use a condom if deciding to have sex and their benefit in preventing AIDS and STDs ($p < 0.05$). Focus groups and interviews showed parental, teacher and student acceptance and need for this type of program.

Conclusions: An adapted BD program aimed at improving sex education in rural southwest Guatemala is feasible, acceptable and potentially impactful in changing risk perception and reproductive health knowledge of teenagers.



Abstracts continued

Understanding Knowledge, Attitudes, and Practices of Exclusive Breastfeeding at Dhulikhel Hospital, Nepal

Kara Blaisdell,¹ BA/BS, Bijan Ghaffari,¹ BS, Cristianna Ruple,¹ BS, Allison Strauss,¹ BA, Geoffroy Fauchet,¹ MD, MPH, Bhagirathi Kaystha,² MD, Jennifer Bellows,¹ MD, MPH

¹University of Colorado School of Medicine, CO/US, ² Dhulikhel Hospital, Nepal

Background/Objective: In Nepal, 41% of children under five are stunted and infant mortality remains high. Exclusive breastfeeding (EBF) has been proven to reduce stunting, malnutrition, and infant mortality. EBF is defined as giving infants only breastmilk for the first six months of life. To assess the need for a future EBF intervention at Dhulikhel Hospital, we investigated EBF related knowledge, attitudes, and practices among pregnant Nepalese women.

Methods/Designs: A quantitative survey was administered in Nepalese to pregnant women 18 years of age or older at Dhulikhel Hospital's antenatal clinic. A team of three local research assistants were trained to orally conduct the 93 question survey that assessed knowledge, prior experience, beliefs, and social norms related to breastfeeding practices.

Results (preliminary): The questionnaire, administered between July and August 2016, was completed by 300 participants aged 18 to 38 years-old (mean of 24-years-old). Of the 111 (37%) women who had previously breastfed, only 54 (49%) reported exclusively breastfeeding for six months or longer. While 188 (63%) of those surveyed intend to feed their child only breastmilk for the first six months, only 89 (43%) were familiar with the term "Exclusive Breastfeeding."

Conclusions: Rates of EBF in Dhulikhel are significantly lower than the WHO's target goal of 90%, likely due to a lack of knowledge relating to EBF. As the practice of EBF is crucial to addressing stunting and infant mortality, implementing a formal EBF intervention tailored to the Dhulikhel community is recommended.

Group B Streptococci Colonization in Pregnant Guatemalan Women: Prevalence, Risk Factors and Vaginal Microbiome

Anne-Marie Rick, MD, MPH, Angie Aguilar, MD, Rosita Cortes, Remei Gordillo, Mario Melgar, MD, Gabriela Samayoa-Reyes, BS, Daniel N Frank, PhD, Edwin J Asturias, MD

Background: Infection causes one of every five neonatal deaths globally. Group B streptococcus (GBS) is the most significant pathogen, though little is known about its epidemiology and risk in low-income countries.



Methods: A cross-sectional study in 2015 at a public hospital in Guatemala City enrolled women ≥ 35 weeks' gestation. Vaginal and rectal swabs were processed using Lim broth and GBS CHROMagar™ then agglutination testing. Risk factors were assessed using multivariate analysis. Vaginal microbiota were profiled by 16S rRNA sequencing in a subset of 94 women.

Results: Of 896 pregnant women, 155 (17.3%; ^{95%}CI:14.9-19.9) were GBS colonized. Colonization was associated with history of previous infant with poor outcome (OR:1.94; ^{95%}CI:1.15-3.27) and increasing maternal age (OR:1.05; ^{95%}CI:1.02-1.09). Multi-parity was protective (OR:0.39; ^{95%}CI:0.21-0.72). Four (6%) GBS exposed infants had early onset neonatal sepsis. Vaginal microbiome composition was associated with previous antibiotic exposure ($p=0.003$) and history of low birth weight infant ($p=0.03$), but not GBS colonization ($p=0.72$). Several individual taxa differed in abundance between colonized and non-colonized women.

Conclusions: GBS is prevalent in pregnant women from Guatemala with different risk factors than previously described. Although the vaginal microbiome was not altered significantly in GBS colonized women, use of antibiotics had an effect on its composition.

Abstracts continued

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

Background: HIV-positive women's adherence to the prevention of mother-to-child transmission (PMTCT) cascade, including antiretroviral therapy (ART) during and after pregnancy, safe infant feeding, and pediatric HIV testing, is critical for optimal maternal and child health. Adherence to such protocols, however, remains a challenge across sub-Saharan Africa. Intimate partner violence is associated with numerous negative HIV-related outcomes but has not been adequately examined in relation to PMTCT.

Objective: This study aims to determine if there is a relationship between intimate partner violence and non-adherence to protocols across the PMTCT cascade of care.

Methods/Design: Four trained local research assistants administered a cross-sectional survey to 320 HIV-positive postpartum married women attending routine pediatric immunizations at a large public health center in Lusaka, Zambia. Eligible consenting participants provided information on drug adherence during and after pregnancy, infant feeding practices, pediatric HIV testing, demographic characteristics, and relationship dynamics with the husband, including different forms of violence. Multivariate logistic regression models in Stata 12 determined the odds of adherence to various PMTCT protocols by women's experiences with violence after adjusting for covariates.

Results: Experiencing intimate partner violence is associated with reduced adjusted odds of adherence to ART during and after pregnancy, safe infant feeding, and pediatric HIV testing. Moreover, different forms of violence affect adherence differentially. Physical violence has a less pronounced affect on non-adherence than emotional and sexual violence.

Conclusions: Intimate partner violence against HIV-positive women deserves increased attention within the global effort to eliminate mother-to-child transmission of HIV.

Cohort Effect in HCV Infection, Morbidity and Mortality: Results from 7 African Countries

Helen Nde, MPH, Sarah Robbins, MSPH, Jonathan Schmelzer, MPH, Katie Razavi-Shearer, BA, Devin Razavi-Shearer-Spink, BA, Chris Estes, MPH, Sarah Blach, MHS, CPH, Jessie Gunter, MPH, Homie Razavi, MBA, PhD,

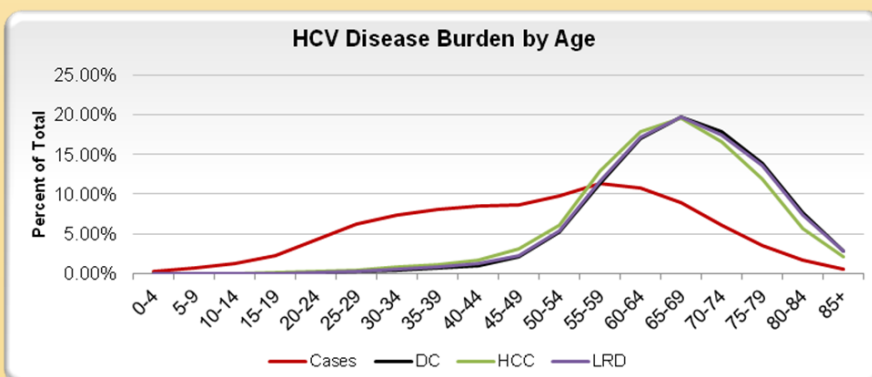
**Disclosure: All authors are employees of the Center for Disease Analysis, Lafayette, CO

Background: The hepatitis C virus (HCV) epidemic inflicts a substantial disease burden on populations as chronic infection progresses to decompensated cirrhosis (DC), hepatocellular carcinoma (HCC), and liver related death (LRD) over time. While the African continent has a high burden of HCV, data to inform screening and treatment strategies is lacking.

Objective: Model and analyze age-related trends in HCV infection, morbidity and mortality in Cameroon, Egypt, Ethiopia, Ghana, Morocco, Nigeria and South Africa.

Methods/Design: Excel-based disease progression models were seeded with published and/or expert-verified unpublished epidemiological data and used to estimate country-specific 2015 trends.

Results: Individuals over 50 years of age account for 52% of all infections and over 90% of all cases of HCV-related advanced liver disease and mortality. The 55-59 year cohort had the highest percent of all infections (11%; 1.5 million cases). However, individuals aged 65-69 years shouldered the heaviest burden of late stage liver disease, with approximately 20% of all cases of DC, HCC and LRD each, corresponding to approximately 26 800, 4800 and 9500 cases respectively.



Conclusion: Considering the high burden of infection in individuals aged 55-59, and the increased rate of late stage disease and death five to ten years later, carefully designed strategies are necessary to maximize resources. Screening and treatment of individuals aged 55-59 is vital to prevent progression to late stage liver disease.

Abstracts continued

Health Worker Acceptability of a mHealth Solution for PMTCT in Tanzania

Deborah S K Thomas (PhD)¹, Kristen Daly (PhD)², Elias C. Nyanza (MPH)³, Sospatro E Ngallaba (MD, MSc, MPH)³, and Sheana Bull (MPH, PhD)²

¹Department of Geography & Environmental Sciences, University of Colorado Denver, ²Department of Community and Behavioral Health, Colorado School of Public Health, University of Colorado Anschutz Medical Campus, ³School of Public Health, Catholic University of Health and Allied Sciences, Tanzania

Objectives: Health workers (HWs) are increasingly using mobile health technologies in low-resource settings. Understanding HW acceptability of mobile health (mHealth) is critical to bringing mHealth solutions to scale. We examined pre- and post-pilot clinical knowledge and acceptability of a tablet-based platform, the Tanzania Health Information System (T-HIT), targeting HWs delivering prevention-of-mother-to-child-transmission of HIV (PMTCT) services in seven health facilities in Misungwi District, Tanzania.

Methods: We developed a survey based on the Diffusion of Innovation Theory and administered it to 27 HWs before and after a 3-month pilot of T-HIT. Using a paired t-test, we analyzed changes in acceptability defined as attitudes towards and self-efficacy for system use comparing pre- and post-test assessments and changes in knowledge of clinical care. Using ANOVA analysis, we explored these changes, stratifying health facilities by level of care and by distance from the district hospital.

Results: Post-pilot mean scores showed statistically significant improvement from pre-test for the total survey. HW in hospitals and health-centers exhibited a lower initial level of system acceptability than those in dispensaries and a significantly larger improvement in overall acceptability over time. HW working more than 20km from the hospital had a lower initial level of both system knowledge and acceptability than their less remote counterparts, but a larger improvements in knowledge and acceptability over time.

Conclusions: Acceptability is critical for fostering mHealth scale and program sustainability. Using an mHealth solution can facilitate HW delivery of PMTCT care in rural and remote settings.

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, University of Colorado Anschutz Medical Campus

Background: Global health is a sought after component to medical education and there are growing numbers of institutions offering such programs (1). While the University of Colorado has a diverse set of global health opportunities available, the new Medicine/Pediatric residency program is lacking a formal curriculum that would unify these resources and ensure comprehensive global health training for residents.

Objective: Identify the number of accredited Medicine/Pediatric residency programs that offer international medicine components to their training programs and determine if prospective and current Medicine/Pediatric residents at the University of Colorado desire similar opportunities.

Methods: Websites of the 75 accredited Medicine/Pediatric residency programs were reviewed for the presence or absence of global health opportunities for trainees. A survey was created and distributed to prospective Medicine/Pediatrics residents who interviewed at the University of Colorado during the 2015-2016 season and a similar survey was given to current residents to determine the global health interests among both groups.

Results: Of the 75 programs searched, 16% (12) advertise a dedicated Medicine/Pediatric global health track. Of those surveyed, 84% of prospective (21/25) and 63% of the current residents (7/12) desire some type of international component to be included in their training. Of the prospective applicants, 32% (7/25) rate the presence of global health opportunities as "very important" when choosing a residency program.

Conclusions: Prospective and current Medicine/Pediatric residents want to participate in global health opportunities and education during their training. This provides a strong impetus to develop a University of Colorado Medicine/Pediatric specific global health curriculum.

1. Kerry VB, Ndung'u T, Walensky RP, Lee PT, Kayanja VF, Bangsberg DR. Managing the demand for global health education. *PLoS Med.* 2011 Nov;8(11):e1001118. Epub 2011 Nov 8.

Abstracts continued

Telehealth Based Community Health Nurse Education in Rural Guatemala

Kelly McConnell, MD¹, Maya Bunik, MD, MSPH^{1,2}, Maureen Lenssen, MSN, PNP^{1,2}, Lyndsay Krisher, MPH¹, Saskia Bunge Montes, MD, MPH¹, Gretchen Domek, MD, MPhil^{1,2}

1: Center for Global Health, Colorado School of Public Health; Aurora, Colorado USA 2: Pediatrics, University of Colorado School of Medicine, Aurora, Colorado USA

BACKGROUND: The rural, southwest Trifinio region of Guatemala has high rates of poverty and childhood morbidity and mortality. An early childhood health and education program is run by community health nurses (CHNs) who conduct regular individual and group visits with mothers. The CHNs assess the health of children ages 0-3 in the surrounding communities and teach health topics to the mothers. Per CHN request for ongoing education, we developed lectures through a telehealth platform. Our objectives were to demonstrate increased CHN knowledge in child health topics, satisfaction and convenience as well as connection between instructors and learners.

METHODS: We taught two blocks of five lectures each via telehealth. The CHNs and instructors interacted and viewed the shared screen. Each session was evaluated for content, technology, and connection by positive statements on a Likert scale. Pre- and post-tests assessed knowledge in the specific topics.

RESULTS: Seven CHNs and six instructors participated. CHNs increased knowledge by an average 10.7% from pre- to post-test scores. CHNs agreed with positive statements regarding lecture content, utility, ease of use, and connection to the instructor at least 98% of the time. Instructors also reported high (100%) convenience and ease of use as well as connection to the learners (86.4%).

CONCLUSIONS: Telehealth is a feasible, convenient, and acceptable teaching method for rural CHNs in Guatemala. This is an important option for continuing education and training as organizations consider savings in costs, time, and the environment while aiming to maintain strong supportive relationships with CHNs across large distances.

Development of a Subspecialty Cardiology Curriculum for Pediatric Registrars in Malawi: Implementation of a Long Distance Hybrid Model

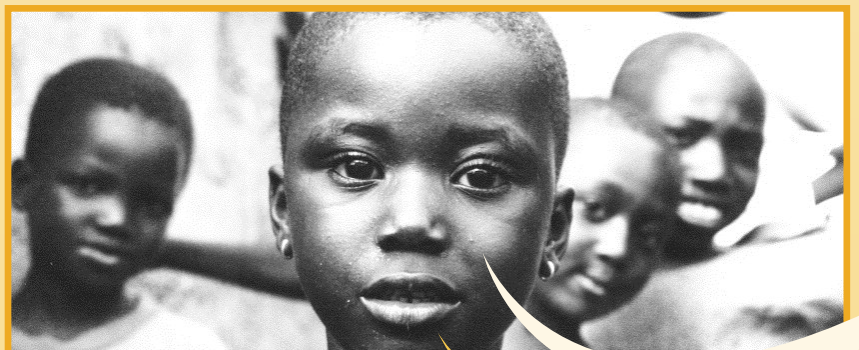
Laura Newberry, MD, FAAP, DTM&H¹, Neil Kennedy, MRCPCH, MMedSci, DTM&H¹, Elizabeth Anne Greene, MD, FAAP²
1 University of Malawi, College of Medicine, 2 University of New Mexico School of Medicine

Background/Objective Malawi has a high burden of paediatric cardiac disease but a limited number of health providers familiar with these chronic diseases. Given the rising number of Malawian post-graduate paediatric trainees at the College of Medicine, we sought to remedy this lack of trained professionals in the basics of cardiology with a long distance curriculum module that could be utilized independently as needed with on site teaching.

Methods Online modules with interactive evaluations and quizzes were developed by Dr Anne Greene, a paediatric cardiologist in the United States in collaboration with the registrar training directors in Malawi, Laura Newberry and Neil Kennedy. This online interactive curriculum was followed by several site visits from Dr. Anne Greene to provide bedside teaching, case based discussions and hands-on skill training in cardiac ultrasound and electrocardiogram interpretation. Evaluation of the curriculum model included post-module quizzes on cardiac topics as well as registrar self-assessments regarding confidence in content areas.

Results The average post-module quiz score was 94%. Repeat testing with the same questions four months after the modules were used and tested demonstrated an average score of 78%. Pre and post module registrar self-assessment regarding confidence in content area showed a substantial gain in knowledge and confidence mean scores. In qualitative feedback, registrars noted that the modules were helpful in studying for their certifying examinations.

Conclusion Our innovative hybrid approach combining online educational modules with in person teaching visits is a useful approach in expanding pediatric cardiology subspecialty education in Malawi.



Abstracts continued

Birth Attendant Training to Reduce Neonatal Mortality in Loreto, Peru: A Program Evaluation

Laura C Warner, MD, MPH, Medical Director, SET Family Medical Clinics and Global Health Initiatives, Centura Health—Community Health

Background: The remote Loreto region of Peru is one of the poorest in the country and experiences neonatal mortality twice that of the national rate. Therefore, a train-the-trainer program to build neonatal resuscitation skills among local birth attendants was launched. The goal of this program evaluation is to assess grant objective achievement and provide recommendations for further success in the second year of funding.

Methods: Data collected from July 2015 through June 2016 were evaluated. Items included were training course rosters and quality evaluations, course participant knowledge assessments (at two time points) and skills practice records, provider-completed birth logs, and follow-up skills check scores. Recommendations for policy and procedure modifications were made via team consensus.

Results: Eleven training courses were conducted, reaching 108% of the total target number of participants. Course evaluation scores averaged an overall 4.8 out of 5 possible points. Knowledge transfer was demonstrated by a statistically significant improvement between pre- and post-test scores for each course session (paired t-test, all $p < 0.05$), although some decay in knowledge and skills was noted at mid-year monitoring visits to each district. Eight-hundred twenty-eight birth logs were collected. Recommendations include developing data-sharing protocols with the regional ministry of health and expanding the program geographically.

Conclusions: Results indicate the program met all grant objectives. Strict compliance with grant standards and demonstrated success in process outcomes increase the probability of obtaining future funding for program expansion and sustainability. Additional grants are essential for demonstrating long-term impact on neonatal mortality rate reduction.

Excellence in Global Health Award - 2016 Recipients



Theodore C Ning, MD, FACS and 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.

He 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 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)**.

(continued on next page)

Excellence in Global Health Award - 2016 Recipients continued



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 many major teaching institutions in 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 community development. Rural childhood malnutrition was overwhelming in Vietnam and was the underlying problem for many medical conditions. *FB* discovered women as 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). www.friendshipbridge.org

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. www.starfishonebyone.org

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 the Excellence in Global Health 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.

Peter Durst, the creator of this years *Excellence in Global Health Award* is a longtime Colorado ceramist and sculptor. his work has been exhibited nationally for the past 35 years in galleries, art centers, museums, private collections, and public spaces. he received a BA from Allegheny College and a JD from NYU School of Law, as well as ceramic training at Anderson Ranch Arts Center in Snowmass, Colorado. He was instrumental in establishing the Ceramics Program at the Art Students League-Denver, and serves on the faculty there.

Peter Durst is also one of the contributors to the endowed student scholarship, the Robinson Durst International Student Scholarship (the other contributor is William Robinson, MD). This Scholarship is given to students on an annual basis to help support their travel for work in underserved areas of the world.

PETER DURST STUDIO GALLERY and SCULPTURE GARDEN

1571 SOUTH BROADWAY, DENVER, CO 80210
<http://peterdurstart.com/index.html>



"Sometimes it falls upon a generation to be great. You can be that great generation."

~Nelson Mandela

The health of people and communities around the world will require strong partnerships and dedication to improving health equity and access to care. Consider supporting this noble cause through the Center for Global Health.

You can make a difference in the life of a student, research of a faculty member, or success of a program by making a gift to the Center for Global Health.



Gifts to support the Center can be made through the CU Foundation. All contributions to the Center for Global Health are **tax deductible** to the extent allowed by IRS regulation.

Want to learn more? Contact Megan Cooke at the CU Foundation: megan.cooke@ucdenver.edu



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