Primary Presenter: Brian Adams

Project Title: Evaluating the cost of antimicrobial resistance and errors in estimates: a systematic review and meta-analysis

Primary Mentor: Leana May

Secondary Mentor(s):

Thematic Area: Public Health and Epidemiology

Abstract:

Background: As the burden of antimicrobial resistance (AMR) increases worldwide, it is important for policymakers to accurately estimate the cost of AMR infections in standardized currencies. This systematic review and meta-analysis seeks to draw from diverse AMR costing studies to determine the cost of AMR resistance, determine the prevalence of study design errors, and to examine the impact of study design errors upon cost estimates.

Methods: Pubmed, Embase, Cochrane, and Web of Science were searched for systematic reviews of AMR costing studies. Studies in English reporting patient-level AMR cost between February 1990 and 2018 based on pre-specified criteria were considered. The presence of various design errors was evaluated using pre-specified criteria, and the relationship between error types was explored using regression techniques. Meta-regression was utilized to explore the relationship between design errors and costing estimates (STATA15).

Results: Of 266 retrievals, 55 unique studies were included representing a variety of organisms, antibiotic resistance types, study populations, and geographic locations. Statistically significant differences in cost were found depending on country income ($p=0.01$), whether the study took place in the USA ($p=0.01$), the organism stain ($p=0.01$), organism type ($p=0.02$), and antibiotic type ($p=0.01$), with an overall median AMR cost of 14932.28 June 2019 USD (95% CI, 14484.31, 15380.25). The majority studies (96.4%) analyzed included at least one type of study error. No relationship was found between study error types and AMR cost estimates.

Conclusions: The disparities in AMR cost based on country economic class, organism stain, organism type, and antibiotic type reflect differences in treatment modalities and reveal the difficulty in expressing one "œoverall "• number expressing AMR cost. The high prevalence of design errors/strong error relationships reveals many AMR costing estimates are inaccurate, highlighting the need for more accurate models taking into account the effect of confounding factors and time on resistant infections.

Primary Presenter: Yaa Asare

Project Title: Quality Improvement of Data Collection and Utilization of Health Information from Dhulikhel Hospital Outreach Centers

Primary Mentor: Geoffroy Fauchet

Secondary Mentor(s):

Thematic Area: Global Health

Abstract:

The Dhulikhel Hospital in Nepal has established 16 outreach centers in nine districts to serve communities that do not have access to healthcare facilities. However, there was no method for tracking the changes in health status and therefore no efficient means of creating interventions that target specific needs of the community. The objective of this project was to develop a questionnaire with which the providers serving the outreach centers could collect data on the health status of their patients. Content of the questionnaire was informed by interviews with two pediatric outpatient providers, documented pediatric diagnoses between January-June 2018, and a literature review. Target population was 6-16 year-old students. Evaluation of pediatric diagnostic data revealed that a majority of concerns involved pulmonary and gastrointestinal systems. Pneumonia and other pulmonary conditions comprised 28.5% of diagnoses, and gastrointestinal concerns such as dysentery was 25.7%. Components of the questionnaire included personal and family health history, nutrition, and hygiene, and review of systems that emphasize commonly affected organ systems.

Primary Presenter: Megan Brown

Project Title: Comparison of Healthcare Service Utilization By Language and Refugee Status

Primary Mentor: Kristine Rodrigues

Secondary Mentor(s):

Thematic Area: Global Health

Abstract:

Introduction: Non-English Non-Spanish (NENS)-speaking immigrant and refugee populations, unique in their cultures, languages, backgrounds, and health concerns, experience specific healthcare needs and disparities that place unique demands on the current Coloradan healthcare systems.3-6,11-14,16-23,28,34,36,41,44,47,52,54 Previous studies have explored the health disparities of refugees in comparison to immigrant or United States (US)-born populations.27 A few have also compared English-speaking, Spanish-speaking, and NENS-speaking populations20-21,23,32,50-51; however, less is known about healthcare utilization for specific NENS[1]-speaking, refugee and immigrant populations.

Methods: To explore emergency department and urgent care utilization as well as inpatient hospitalizations by language and refugee status, we performed a retrospective observational cohort study of patients, ages 0-99 years, seen in the Denver Health Emergency Department, one of Denver Health"s urgent cares, or hospitalized at Denver Health in 2019. Using administrative data, we collected demographic and clinical characteristics, including gender, age, insurance and employment status, years followed in the Denver Health system, medical complexity, preferred language, refugee status, and race/ethnicity, and also determined how many emergency department or urgent care visits (calculated together as acute care visits)[2]and hospitalizations each patient had in 2019. We then performed univariate and multivariate logistic regression analysis comparing acute care utilization and hospitalization by preferred language, language group, and refugee status.[3]

Results: 81,462 patients seen in the emergency department, urgent care, and hospitalized at Denver Health were included in the study sample. Patients" preferred languages were 80.5% English (n = 65,577), 16.4% Spanish (n = 13,337), and 3.1% NENS (n = 2,548). Of the patients in the sample, 0.2% (n = 133) were classified as refugees, which was fewer than expected. Compared to English speakers, Nepali-(adjusted OR 0.4, 95% CI [0.2-0.9]), Somali- (adjusted OR 0.5, 95% CI [0.3-0.98]), and Vietnamese-speaking patients (adjusted OR 0.6, 95% CI [0.4-0.8]), had lower odds of recurrent acute care visits. Spanish- and Vietnamese-speaking patients had higher odds of hospitalization compared to English speakers (adjusted ORs 1.6, 95% CI [1.5-1.7] and 2.0, 95% CI [1.4-2.8] respectively). No difference was found the other preferred languages compared to English for recurrent acute care visits or hospitalizations. When grouped together, the NENS language group had lower odds of having recurrent acute care visits ([adjusted OR 0.8, 95% CI [0.7-0.9])compared to English speakers. There was no difference between NENS speakers and English speakers for hospitalizations. Refugees had lower odds of hospitalization compared to non-refugees (adjusted OR 0.4, 95% CI [0.2-0.8]) but no difference was found for recurrent acute care visits.

Conclusions: Emergency department/urgent care utilization and hospitalization vary by language and refugee status. Grouping languages together (e.g. all NENS or all limited English proficiency) can lead to missing disparities and needs of specific immigrant and refugee groups. More research is needed to explore these missing disparities to determine the specific needs of these populations in order to provide equitable healthcare.

Primary Presenter: Kaitlyn Brunworth

Project Title: Selection of trainees for global health electives: a literature review

Primary Mentor: David Richards

Secondary Mentor(s):

Thematic Area: Global Health

Abstract:

Background: As medical trainee participation in global health experiences (GHE) increases, ethical and logistical challenges must be addressed to ensure that GHEs are beneficial both to trainees and hosting institutions. Selection of suitable trainees for GHEs is an important aspect of a mutually beneficial global health partnership.   To our knowledge, a literature review on best practices for selection of trainees for GHEs does not yet exist.

Objectives: To systematically review literature regarding current practices in selection of trainees for GHEs, and to investigate whether existing programs involve host institutions in the selection of trainees.

Methods: The authors performed a systematic review of literature indexed on PubMed, CABI, and EMBASE in July of 2020.   Abstracts were limited to studies in English related to selection guidelines for trainees in global health experiences published in the last 5 years.

Results: A total of nine articles met inclusion criteria.   Two major themes emerged: criteria for trainee selection and selection methods.   Selection criteria included self-selection, ability to pay, academic standing, clinical qualifications, and non-academic attributes.   Selection methods included written application, letter of recommendation, personal interview, and multiple mini interview.

Discussion: Standardized guidelines for the selection of trainees for GHEs do not yet exist. When selecting trainees for a GHE, in addition to academic standing and clinical skills, it is important to select for favorable attitudes and behaviors known as non-academic attributes. While several sources emphasized the importance of building a lasting partnership between host and sending institution, only one source described the methods by which the host institution was involved in selection of trainees. These findings are important because they identify a gap in practice and an opportunity to develop and evaluate a system for trainee selection for GHEs.

Primary Presenter: Mark Farchione

Project Title: Overview and History of Medical Education in Germany, France, United Kingdom, and the United States

Primary Mentor: Jennifer Bellows

Secondary Mentor(s):

Thematic Area: Global Health

Abstract:

The modern Western undergraduate medical education system involves the incorporation of three main teaching methods: didactic classroom learning, clinical skills practice, and laboratory training. The extent to which each method has been formally emphasized has varied between countries and time periods. From the early 1700s until the early 1900s, three main changes in medical education were identified that define the transition from the pre-Age of Enlightenment methods of teaching to the modern day medical education systems in the United States and Western Europe. These are: 1. The abandonment of apprenticeships in favor of more formal training in universities and teaching hospitals. 2. The combination of didactic learning, laboratory training, and clinical skills practice. 3. The standardization of medical school curricula and the granting of medical licenses to reduce variation in the competencies of different physicians. These three changes occurred in different countries at different times, but the general trend seen indicates that most educational innovation occurred first in the German states before being adopted by its neighbor France. The United Kingdom and the United States were the last major Western countries to adopt the three changes and enter the modern era of medical education.

Primary Presenter: Amber Fleck

Project Title: A Literature Review of Community Health Volunteers (CHVs): Characteristics, Experiences, and Motivations

Primary Mentor: Madiha Abdel-Maksoud

Secondary Mentor(s):

Thematic Area: Global Health

Abstract:

Countries around the world are suffering from severe healthcare personnel shortages.19 In an attempt to alleviate some strain on the healthcare infrastructure and increase access to care, implementation of community health volunteer (CHV) programs has increased substantially.19,20 CHVs work within their communities and provide health education, sanitation training, specialty counseling, or referrals when necessary.8,9 This literature review explores the characteristics, experiences, and motivations of community health volunteers in order to better understand opportunities for improved sustainability and functionality of these programs. Motivations for fulfilling these positions include: personal recognition, personal development, community service, and monetary/non-monetary incentives.10,12,13,20 However, the significant volunteer turn-over and high attrition rates have raised doubt on the sustainability of CHV programs.9,24 The reasons for attrition have been explored and narrowed down to the following: insufficient remuneration, lack of quality support, excessive demands of the position, and unmet expectations for development. 5,7,10,20,25 Taking into consideration CHV desires and reasons for dissatisfaction may enhance the creation of efficient and sustainable programs, which fill sizable vacancies in the healthcare system.

Primary Presenter: Sanju Garimella

Project Title: WHO Package of Essential Noncommunicable (PEN) Disease Interventions for Primary Health Care

Primary Mentor: Leana May Moser

Secondary Mentor(s): Madiha Abdel-Maksoud, Cherian Varghese, Geneva, Switzerland

Thematic Area: Global Health

Abstract:

"The adoption of the Global Strategy for the Prevention and Control of Noncommunicable Diseases (NCDs) at the World Health Assembly in 2000 was an act of solidarity with the many low- and middle-income countries facing the catastrophic consequences of NCDs. It was also an acknowledgement that the long-term needs of people living with NCDs were being neglected, and was a turning point that has inspired action over the past two decades.

The risk of a 30-year-old person dying from any of the four major NCDs (cardiovascular diseases, cancers, chronic respiratory diseases, and diabetes) before the age of 70 years declined by 15% globally between 2000 and 2012. This rapid improvement was largely due to policy, legislative and regulatory measures put in place to provide more people with access to screening; early diagnosis and treatment for hypertension (such as aspirin, beta blockers, diuretics and statins); and to protect people against tobacco use (such as through tobacco- control legislation).

Despite the important progress made in the first decade of the 21st century, momentum has since dwindled, with annual reductions in age-standardized premature mortality rates slowing for the main NCDs. Between 2000 and 2016 overall NCD risk declined only 18% globally " with the risk of diabetes showing a 5% increase. In the past two decades NCDs have killed 200 million women and men aged between 30 and 70 years, the majority living in low- and middle-income countries. Most of these premature deaths could have been avoided. Unless immediate action is taken, Sustainable Development Goal (SDG) target 3.4 (reduce premature mortality from NCDs by one third) by 2030 will not be met. It is therefore more important than ever for the global community to mobilize for accelerated action to progressively cover

1 billion additional people with essential health services and medicines for the prevention and control of NCDs.

WHO has been providing guidance to advance this work. The Package of essential noncommunicable (PEN) disease interventions for primary health care in low-resource settings was first introduced in 2010 as a prioritized set of cost-effective interventions able to deliver an acceptable quality of care, even in resource-limited settings. Information on the cost-effectiveness of the interventions helped to make limited resources go further. From 2010, many additional elements were added and in 2013 a comprehensive set of tools was developed. The total cardiovascular risk assessment charts and management of type 2 diabetes were further updated in 2019.

The result today is this user-friendly WHO package of essential noncommunicable (PEN) disease interventions for primary health care resource, which brings together all these updates as protocols that are adaptable to local settings and able to empower primary care physicians, as well as allied health workers, to contribute to NCD management. WHO PEN is not meant to be exhaustive or prescriptive, but rather to be an important first step for integration of NCD management into primary health care. WHO PEN is also suitable for emergency and humanitarian settings. When implemented, it will bring more people living with or affected by NCDs into contact with the health system and promote universal health coverage"

Primary Presenter: Darean Hunt

Project Title: A Community Based Participatory Research Initiative Addressing Alcohol Use in the Refugee Population from Burma

Primary Mentor: Leana May

Secondary Mentor(s): Janet Meredith

Thematic Area: Global Health

Abstract:

BACKGROUND: Since 1948, there has been ongoing civil war and strife within Burma, causing thousands of civilian deaths and millions to be displaced from their homes. Many have sought safety in unofficial refugee camps along the Thai-Burma border. These camps are rudimentary and lack basic necessities. From 2006-2016, it is estimated that 159,692 refugees from Burma left these camps and ultimately resettled in the United States, making refugees from Burma the largest group of refugees during that decade1. Many of those seeking a new life found themselves resettling in Colorado. The refugee population in the Denver Metro area is the largest in all of Colorado.   Refugees exposed to violence, either directly or indirectly, as many from Burma have been, are at increased risk of anxiety, depression, and substance use disorders2,3. Refugees often struggle to navigate the complexities of the American healthcare system4,5. The development of novel programs and partnerships to assist refugees in access and acquisition of healthcare is essential to build stronger communities.

OBJECTIVES: Establish a partnership with stakeholders in the refugee community, work in direct partnership with the community to identify health-related areas of concern, and develop a culturally appropriate intervention to address these areas of concern.

METHODS: The project was divided into three phases that utilized community-based participatory research (CBPR) principles. The first phase of the project was undertaken in 2014 and sought to establish a partnership with stakeholders in the refugee community. This included working with community organizations and leaders including refugee housing managers, members of the Aurora Police Department, The Spring Institute, healthcare navigators, healthcare providers, and youth from the refugee community themselves. Phase one also consisted of working in direct partnership with refugee youth and other stakeholders in the community to form a Youth Advisory Board (YAB), with the aim of identifying a health related area of concern within their community that they would like to address. This was achieved through informal focus groups and discussions with the Youth Advisory Board. The members of the YAB identified alcohol use as their paramount concern. With an identified concern and community partnerships established, phase 2 began. Phase 2 consisted of IRB approved structured qualitative interviews to better understand the effects of alcohol use on the community and to identify any possible interventions that may already exist.   The qualitative interviews were transcribed and analyzed using immersion crystallization methodology.   Multiple medical student coders individually analyzed each interview transcript and multiple themes emerged. Phase 3 is currently underway, with the aim of presenting the findings to the community, and

generating a culturally appropriate intervention to address problematic alcohol use from the themes that were identified.

RESULTS: After Immersion Crystallization of the 10 interviews, several themes were generated. These themes include: problematic alcohol consumption spanning across all ages and ethnic groups, problematic alcohol use originating in the refugee camps, positive and negative influential roles of family and religion on consumptive practice, impact of problematic alcohol use on unemployment and violence, knowledge deficit on the negative impact of alcohol on physical health and wellness, and the lack of access to a culturally appropriate intervention.

CONCLUSIONS: This project expands upon current literature regarding the impact of alcohol use within the community of refugees from Burma. The themes generated will be leveraged to create a culturally competent intervention to effectively address alcohol use in this community.

Primary Presenter: Andrew Kamel

Project Title: THE EVALUATION OF MEDICAL STUDENT INTERNATIONAL MISSION TRIPS: A RAPID REVIEW

Primary Mentor: Rosemary Frasso

Secondary Mentor(s):

Thematic Area: Global Health

Abstract:

BACKGROUND: Previous reviews of the literature on medical mission trips have noted that there is a dearth of rigorous data collection and evaluation of the efficacy of medical missions to low- and middle-income countries (LMICs). Medical students are increasingly participating in these trips as global health curriculums become more popular and prevalent, and the literature about these international experiences has not been well-described. This rapid review aims to characterize the evaluation of medical mission trips for medical students to LMICs.

METHODS: This article is a rapid review of the literature using PRIMSA guidelines to search PubMed for studies about the evaluation of medical mission trips involving medical students. Results were sorted using inclusion and exclusion criteria to select studies for qualitative synthesis.

RESULTS: 19 articles were selected for inclusion in the qualitative synthesis. 47.4% evaluated only medical students, 31.6% evaluated a mix of medical trainees and clinicians, and 21% evaluated host clinicians and coordinators rather than students. 41.2% of included studies used pre- and post-experience surveys, 15.8% used only post-experience surveys, and 36.8% used semi-structured interviews. One study tested knowledge. Outcomes measured varied considerably, but often evaluated student and host perceptions and opinions of medical missions, ethical concerns, and international health care.

CONCLUSIONS: Studies evaluating medical missions for medical students reflect issues in the broader medical mission trip literature. Qualitative analysis and evaluation of student perceptions and opinions are disproportionately represented, and there is a deficiency of quantitative data collection. This review also demonstrates a lack of rigorous evaluation of outcomes for host countries and clinical outcomes for the patients MMTs treat.

Primary Presenter: Daewoong Kim

Project Title: Implementation of the WHO's Community-Based First Aid Response (CFAR)
Program in Southwestern Guatemala

Primary Mentor: Emilie Calvello-Hynes

Secondary Mentor(s):

Thematic Area: Global Health

Abstract:

Initial stabilization and expedient transfer of acutely ill-patients is a critical first step in
delivering emergency care, which is often an issue in lower-middle income class countries. The
WHO"s Community First Aid Response (CFAR) program is a recently developed 3-day course
designed to equip community members, who are often first to witness a medical emergency, with
the skills and knowledge to mitigate commonly encountered emergent situations. This course
was piloted in the rural Southwestern region of Guatemala, where a qualitative assessment was
performed to evaluate for necessary context-appropriate changes, course content material, overall
generalizability across language and cultural barriers, and major barriers to implementation. The
most important finding revealed by surveys, post-implementation interviews, and focus groups
emphasize the inherent complexity of augmenting pre-hospital systems in austere environments.
To be considered as a widely-distributable and open access community-based education
program, CFAR must address and continually suggest best-practice guidelines in its
implementation, including but not limited to: a thorough assessment of local technologies and
resources, pre-existing capabilities of the community, burden and location of disease, and the
perspective, willingness, and capacity of the individuals involved in the course.

Primary Presenter: Michael Klausner

Project Title: Warfighter Personal Protective Equipment and Combat Wounds

Primary Mentor: Madiha Abdel-Maksoud

Secondary Mentor(s):

Thematic Area: Global Health

Abstract:

Background: Personal protective equipment (PPE) is crucial to force protection and preservation. Innovation in PPE has shifted injury patterns, with protected body regions accounting for decreased proportions of battlefield trauma relative to unprotected regions. Little is known regarding the PPE in use by warfighters at the time of injury.

Methods: We queried the PHTR for all encounters from 2003-2019. This is a sub-analysis of casualties with documented personal protective equipment at the time of medical encounter. When possible, encounters were linked to the Department of Defense Trauma Registry (DODTR) for outcome data. Serious injuries are defined as an abbreviated injury scale of 3 or greater.

Results: Of 1357 total casualty encounters in the PHTR, 83 were U.S. military with documented PPE. We link 62 of this cohort to DODTR. The median composite Injury Severity Score (ISS) was 6 (IQR 4-21), and 11 casualties (18%) had an ISS >25. The most seriously injured body regions were the extremities (21%), head/neck (16%), thorax (16%), and abdomen (10%). PPE worn at time of injury included helmet (91%), eye protection (73%), front (75%) and rear plates (77%), left/right plates (65%), tactical vest (46%), groin protection (12%), neck protection (6%), pelvic shield (3%), and deltoid protection (3%).

Conclusions: Our data set demonstrates that the extremities were the most commonly injured body region, followed by head/neck, and thorax. PPE designed for the extremities and neck are also among the least commonly worn protective equipment.

Primary Presenter: Akshay Kumar

Project Title: A Review of Best Practices to Prepare Medical Students for Responsible Global Health Experiences

Primary Mentor: David Richards

Secondary Mentor(s):

Thematic Area: Global Health

Abstract:

There is an increasing interest in medical students participating in short-term global health experiences, and such programs are gradually becoming more established at many medical schools.   With this comes a striking need to establish best practices for students to have responsible global health experiences. We set out to conduct a review of the existing published literature on best preparation practices for medical students with the goal of consolidating this info for global health programs to use in creating their own short-term experiences. Eleven articles from 2007-2018 were selected for final review after a thorough literature search of several databases that resulted in 759 articles. Of these articles, concepts of bidirectional participation, site-specific resource training, implementation of ethics training, and situational judgement tests and case discussions emerged as the most common themes.   These themes were incorporated in both the selection and training process for medical students embarking on global health experiences. The findings in these articles provide an adequate starting point for novel or existing global health programs seeking to establish their own experiences, and employment of these preparatory practices that are tailored to specifics of a particular international elective can provide enriching experiences for both students and countries of destination.

Primary Presenter: Ian Lawrence

Project Title: Impact of an Educational Workshop on Laboratory Evaluation of Preeclampsia in La Paz, Bolivia

Primary Mentor: Lorna Moore

Secondary Mentor(s): Colleen Julian

Thematic Area: Global Health

Abstract:

Preeclampsia is a significant public health issue in Bolivia: Two-thirds of Bolivia 's population lives above 2,500 meters of elevation, where the risk of preeclampsia is threefold higher than it is at lower altitudes. Preeclampsia carries risks during pregnancy, but also predisposes children to congenital heart and pulmonary circulation issues, along with elevated lifelong cardiovascular risks for both mothers and children who experience a preeclamptic pregnancy. Currently, there is an absence of the usage of standardized diagnostic criteria for preeclampsia in the major obstetric hospitals of La Paz and El Alto, Bolivia, hindering accurate diagnosis and preventive measures to help ameliorate risks associated with preeclampsia. In this study, we aim to evaluate risk factors and adverse outcomes associated with preeclampsia in this context, and to evaluate the implementation of standardized diagnostic criteria written by the American College of Obstetricians and Gynecologists (ACOG) for preeclampsia in hospitals in La Paz/El Alto. To evaluate this, a medical records review was conducted at three hospitals in Bolivia: Hospital Materno-Infantil (HMI), Hospital Boliviano-Holandes (HBH), and Hospital de la Mujer (HdlM). At these hospitals, records of all pregnancies complicated by hypertension over the course of two years were reviewed, along with two control "œuncomplicated "• pregnancies for each pregnancy complicated by hypertensive disorders. Notably, pregnancies complicated by hypertensive disorders were associated with an increased risk of babies Small for Gestational Age (SGA) (24.2% vs 13.5%, p=0.0001), and an increased percentage of neonates receiving supplemental oxygen(14.1% vs 7.8%, p=0.0001) and being transferred to the NICU (15.5% vs 1.8%, p-0.0001). Additionally, there was significant incongruence between diagnoses found in the medical charts and that which ACOG would recommend, with almost 40% of diagnoses of Gestational Hypertension and 70% of diagnoses of Preeclampsia meeting the ACOG criteria for Preeclampsia with Severe Features. This diagnostic incongruence and the associated adverse outcomes for mothers and children suggest further work on implementation of new diagnostic criteria is warranted, which may help in reducing adverse outcomes and guide strategic planning to address these issues.

Primary Presenter: Dung Le

Project Title: A Community Based Participatory Research Initiative Addressing Alcohol Use in the Refugee Population from Burma

Primary Mentor: Janet Meredith

Secondary Mentor(s): Jamaluddin Moloo

Thematic Area: Public Health and Epidemiology

Abstract:

BACKGROUND: For well over 50 years, there has been ongoing civil war and strife within Burma causing thousands of deaths and millions being displaced from their homes. Many have sought safety in unofficial refugee camps along the Thai-Burma border. These camps are rudimentary and lack basic necessities. From 2006-2016, it is estimated that 159,692 refugees from Burma left these camps and ultimately resettled in the United States, making refugees from Burma the largest group of refugees during that decade1. Many of those seeking a new life found themselves resettling in Colorado. The refugee population in the Denver Metro area is the largest in all of Colorado.   Refugees exposed to violence, either directly or indirectly, as many from Burma have been, are at increased risk of anxiety, depression, and substance use disorders2,3. Refugees often struggle to navigate the complexities of the American healthcare system4,5. The development of novel programs and partnerships to assist refugees in access and acquisition of healthcare is essential to build stronger communities.

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CONCLUSIONS: This project expands upon current literature regarding the impact of alcohol use within the community of refugees from Burma. The themes generated will be leveraged to create a culturally competent intervention to effectively address alcohol use in this community.

Primary Presenter: Andrew Levy

Project Title: Implementation of the WHO's Community-based First Aid Response (CFAR) in Southwestern Guatemala

Primary Mentor: Emilie Calvello Hynes

Secondary Mentor(s):

Thematic Area: Global Health

Abstract:

Initial stabilization and expedient transfer of acutely ill-patients is a critical first step in delivering emergency care, which is often an issue in lower-middle income class countries. The WHO 's Community First Aid Response (CFAR) program is a recently developed 3-day course designed to equip community members, who are often first to witness a medical emergency, with the skills and knowledge to mitigate commonly encountered emergent situations. This course was piloted in the rural Southwestern region of Guatemala, where a qualitative assessment was performed to evaluate for necessary context-appropriate changes, course content material, overall generalizability across language and cultural barriers, and major barriers to implementation. The most important finding revealed by surveys, post- implementation interviews, and focus groups emphasize the inherent complexity of augmenting pre-hospital systems in austere environments. To be considered as a widely- distributable and open access community-based education program, CFAR must address and continually suggest best-practice guidelines in its implementation, including but not limited to: a thorough assessment of local technologies and resources, pre-existing capabilities of the community, burden and location of disease, and the perspective, willingness, and capacity of the individuals involved in the course.

Primary Presenter: Matthew Masur

Project Title: QUALITY IMPROVEMENT OF DATA COLLECTION AND UTILIZATION OF HEALTH INFORMATION FROM DHULIKHEL HOSPITAL OUTREACH CENTERS

Primary Mentor: Geoff Fauchet

Secondary Mentor(s):

Thematic Area: Global Health

Abstract:

The Dhulikhel Hospital in Nepal has established 16 outreach centers in nine districts to serve communities that do not have access to healthcare facilities. However, there was no method for tracking the changes in health status and therefore no efficient means of creating interventions that target specific needs of the community. The objective of this project was to develop a questionnaire with which the providers serving the outreach centers could collect data on the health status of their patients. Content of the questionnaire was informed by interviews with two pediatric outpatient providers, documented pediatric diagnoses between January-June 2018, and a literature review. Target population was 6-16 year-old students. Evaluation of pediatric diagnostic data revealed that a majority of concerns involved pulmonary and gastrointestinal systems. Pneumonia and other pulmonary conditions comprised 28.5% of diagnoses, and gastrointestinal concerns such as dysentery was 25.7%. Components of the questionnaire included personal and family health history, nutrition, and hygiene, and review of systems that emphasize commonly affected organ systems.

Primary Presenter: Austin Peralta-Fogle

Project Title: Establishing the Limitations of Research regarding Obesity among Youth with Disabilities: a Narrative Literature Review

Primary Mentor: Jaime Moore

Secondary Mentor(s): Leana May

Thematic Area: Public Health and Epidemiology

Abstract:

Background: Over one-third of children and adolescents aged 2-19 are estimated to be overweight or obese. Increased rates of obesity are seen in the intellectual and/or developmental disability (I/DD) population, as well as in specific disorders such as Down Syndrome and Autism Spectrum Disorder. Within populations of syndromic obesity, such as Prader-Willi and Bardet-Biedl Syndrome, rates can range as high as 70% to 86%. Despite this, high quality data regarding weight reduction interventions in these groups is lacking.

Aim: Examine the literature to outline strengths and limitations of existing research

Method: Narrative review of published studies. The database PubMed was searched using terms related to "developmental disability, " "obesity management, " "pediatric," "obesity, " "Down syndrome, " "Autism Spectrum Disorder, " "Prader-Willi Syndrome, " "Bardet-Biedl Syndrome, " among youth and young adults (birth-24 years) between 2010-2020. Articles meeting inclusion criteria were summarized and evaluated.

Results: Five review articles and three individual clinical trials met inclusion criteria, and described weight management interventions ranging from multidisciplinary weight loss clinics, technology-delivered dietary sessions, to bariatric surgery outcomes. Studies varied by weight loss outcomes, and significant variance existed among the populations studied within each review.

Conclusions: This review reaffirms the scarcity of literature addressing the issue of obesity within the I/DD population. Additional, well powered, longitudinal and randomized studies are needed to better address obesity interventions in this underrepresented, heterogeneous population and to establish standardized clinical guidelines.

Primary Presenter: Stefan Peterson

Project Title: 10 Clinically Relevant Herbals of Traditional Mexican Medicine

Primary Mentor: Monika Nuffer

Secondary Mentor(s):

Thematic Area: Global Health

Abstract:

Traditional Mexican Medicine is a historically significant piece of Mexican culture with herbal medicine and alternative practices very popular today. In 2012 in the United States, approximately $12.8 billion was spent on integrative health and medicine with as much as 33% of the general adult population utilizing these remedies. Most concerning is that 72% of the Mexican American group is not reporting complementary and alternative therapy usage to their health care provider. In support of patient-centered care and as recommended by the National Center for Complementary and Integrative Health(NCCIH), this article seeks to understand the cultural significance of herbal medicines in this population and review 10 common herbals that are used especially within the Mexican and Mexican American population. The guide shares herbals that may be safe and effective as well as others that are unsafe or ineffective, such that these herbals may alter recommendations in patient care. To identify the herbals, multiple interviews were completed in Mexico City and Denver with a variety of health care providers. This included an evaluation of availability of the products. To further investigate the information, a literature review and review of multiple herbal databases both in English and Spanish was completed. The herbals presented are: Toloache (Datura Stramonium), Arnica (Heterotheca Inuloides), Hierbabuena (Mentha piperita), Manzanilla (Matricaria recutita), Sabila (Aloe Vera), Anis Estrella (Illicium Verum), Passiflora (Passiflora Mexicana), Valeriana (Valeriana Edulsis), Gordolobo (Verbascum Densiflorum), and Tila (Tilia americana). For additional historical context, visits to the Mexico City Museum of Medicine were completed which houses an Aztec herbal medicine manuscript from 1552. The primary beneficiary of this information is intended for improved future patient interactions among this population.

Primary Presenter: Jennifer Robinson

Project Title: Viral Load Predicts Virologic Failure on repeat testing in Children on Antiretroviral Therapy at a large clinic in Kisumu, Kenya: A Retrospective Cohort Study

Primary Mentor: Lisa Abuogi

Secondary Mentor(s):

Thematic Area: Global Health

Abstract:

Background: The association between recent viral load testing on subsequent virologic failure in children with HIV on antiretroviral treatment (ART) has not been extensively studied.

Methods: This retrospective cohort study included children with HIV at a large urban clinic in Kisumu, Kenya, ages 0-14 years on ART with at least 2 viral load (VL) results in January 2015-July 2018.   First VL during the study period was compared with subsequent VL. Undetectable VL was defined as 0-39 copies/mL, LLV 40-999 copies/mL, and virologic failure > 1000 copies/mL. Chi square test was used to measure the association between first viral load and other risk factors. Multivariate logistic regression was performed controlling for sex and time on ART to evaluate association with virologic failure on repeat VL as main outcome.

Results: A total of 172 children were included: 49% female with a median age of 10 years, IQR: 8-12 (Table 1). Within this cohort, 110 (64%) children had undetectable virus, 22 (13%) had LLV, and 40 (23%) had virologic failure (VF).   Among children with VF on first VL, 32.5% had VF on subsequent VL, compared to 7.3% with undetectable VL and 9.1% with LLV (p=0.001).   Children with VF were on ART for shorter periods (median 19.8 months, IQR: 10.3-53.3) compared to undetectable children (median 62 months, IQR: 31.3-92.3) and those with LLV (median 65.6 months, IQR: 34.9-88.5) (adjusted Odds Ratio (aOR) 6.8, 95% confidence interval (CI) 2.2-20.5).   In multivariate analysis, there was no significant difference in subsequent virological failure between LLV and children with undetectable virus at baseline (aOR 1.4, 95% CI 0.3-7.3).

Conclusion: Children with virologic failure are at highest risk of continued failure on subsequent viral load. Further studies should evaluate interventions to improve treatment optimization in children with virologic failure and further explore outcomes in children with LLV.