

University of Dayton  
& Miami Valley Hospital

**9<sup>th</sup> Annual  
Healthcare Symposium**

“#Re-think Addiction”

April 14<sup>th</sup>, 2018

Poster Abstracts

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## **Addressing Barriers to Health Locally (ABH)**

**Category: ABH-1**

**Title: Why HELP?**

**Authors: Nathan Brown and Phoebe Mularoni**

This project focuses on the volunteer experiences of students participating in the Hospital Elder Life Program (HELP) at Miami Valley Hospital. The majority of HELP volunteers plan to pursue a career in the health field and join this program with the goal of gaining hands on patient care experience, getting familiar with the health care setting, understanding the health field, and making connections. HELP is centered around developing relationships and skills that will be applied throughout the volunteer's career, and providing a welcoming environment through which students can gain invaluable hands-on experience that is often difficult to find. The purpose of this project is to describe the results of a recent study that was completed in order to better understand the needs and outcomes of students participating in the HELP Program. The study involved interviewing and surveying current and past HELP volunteers on different aspects of the program. The overall goal of the study is to determine what constitutes a meaningful experience for a HELP volunteer in order for the professional staff to provide volunteers with the experiences they need to be successful in preparing for a career in healthcare.

**Category: ABH-2**

**Title: Triage at Reach Out: Benefiting Patients One Step at a Time**

**Authors: Kevin Outwater and Paul Phillips**

Reach Out of Montgomery County is a non-profit healthcare organization dedicated to providing access to health care services for underserved and uninsured populations of Montgomery County. One of the first steps patients take is to go through triage. Triage volunteers at Reach Out obtain patient history, chief complaints, and vitals. However, patients are not seen based on their level of urgency and return to the waiting room after completing triage. Several volunteers typically complete this process with patients simultaneously. Perceived waiting time is a component of patient satisfaction. According to McCarthy et al. (2011) a 10-minute increase in waiting corresponds with an 8% decrease in the odds that patients will report having a "very good" interaction with their provider. As part of an overall patient satisfaction survey, patients were asked to complete a questionnaire which focused on issues including patient wait time. The results of this survey will be presented in this poster, along with recommendations for changes in the triage process based on results obtained.

**Category: ABH-3**

**Title: Healthcare Crisis in West Dayton?**

**Author: Jacob Morman**

Good Samaritan Hospital will be closing its doors by the end of 2018. While the Premier Health Network is hoping to offer new jobs to the majority of Good Samaritan's employees, the effects of the closing will still be felt by the community, particularly by those living on the west side of Dayton. Good Samaritan is one of the only providers of health care on the west side, a region known for low socioeconomic status and the associated health concerns. Five Rivers Health Center is located near Good Samaritan, which will help to alleviate some

access concerns, but cannot replace Good Samaritan on its own. Once Good Samaritan closes, those living on the west side will have to travel even farther for health care. The options for healthcare on the west side are already very limited, and that will only get worse when Good Samaritan closes. The purpose of this poster is to highlight this problem by presenting the most recent data on patients served by Good Samaritan Hospital and health metrics associated with West Dayton.

**Category: ABH-4**

**Title: HELPing Maintain Physical and Mental Fitness in Older Ohioans**

**Authors: Oscar Barnes ValdeJuly, Natalie Casey, and Alan Valadez**

Bed rest poses a potent threat to maintaining muscle tissue and its functional capacity. According to English and Paddon-Jones (2010), the average elderly patient loses 0.95kg of leg muscle mass per every ten days of bed rest. Students at the University of Dayton have the ability to participate in the Hospital Elder Life Program (HELP) at Miami Valley Hospital - an evidence based patient-care program that aims to combat the onset of delirium and dementia in elderly patients aged seventy and older. HELP volunteers conduct daily cognitive and physical assessments and interventions aimed at preserving basic physical and cognitive function throughout the patient's stay. As previous participants of the HELP program at Miami Valley Hospital, we believe it has room for improvement. We believe that if volunteers were more motivated to ensure each patient completes at least one physical activity daily, as tolerated, the patients in the program will benefit more than they are now. For this, volunteers could work directly with patients' therapists to design a program adequate for patients and volunteers to practice together. We also suggest that Miami Valley create an exercise channel that can be accessed on patient televisions, focusing on exercises that can be done in bed. The purpose of this poster is to present data on the benefits of physical activity for the elderly patients confined to bed rest at Miami Valley Hospital as well as suggest how the HELP program can improve to better improve outcomes.

**Category: ABH-5**

**Title: Lack of Insurance Affects Ability to Take Blood Glucose Readings**

**Authors: Erin Clark and Mallory Vild**

In 2015, 30.3 million Americans, or 9.4% of the population, had diabetes. Responses from the National Health and Nutrition Examination Survey (1999-2004) showed that 11.4 million working-age Americans had chronic medical conditions and were uninsured. Of those 11.4 million uninsured, 8.5 million had diabetes. There are more uninsured American adults who are employed with untreated chronic conditions, than their insured counterparts. This is primarily due to their lack of insurance and poor access to the medical care. Reach Out of Montgomery County is a free clinic that provides medical care to those who are uninsured and living within the county. While volunteering at Reach Out, we have witnessed and worked with patients who have chronic conditions, especially diabetes. Even though most physicians recommend that blood glucose readings be conducted at least four times a day, many of the people who come to Reach Out fail to take their reading even once a day. Without this reading, diabetic patients are unable to monitor how well their dosage of medication is working. The greatest barrier to taking a blood glucose level reading at home is the cost of the supplies (glucometer, test strips, etc.). Without insurance, diabetic individuals can spend up to \$1,000 a month on glucose reading accessories. There are organizations such as the CR3 Diabetes Association who provide diabetic testing materials to uninsured families at a low cost. The purpose of this poster is to create a proposal for educating patients on potential sources of funding for glucose testing materials. The poster will provide data related to the need for this educational campaign and specific recommendations and resources for implementation, including an informational pamphlet to distribute to patients.

**Category: ABH-6**

**Title: H.E.L.P: Bedside Intervention by Volunteers to Reduce Risk of Hospital Induced Decline**

**Author: Elizabeth Edurese**

Many elder adults border the line between independence and functional dependence. While elder adults often decline from acute illness, hospitalization for these illnesses can induce decline that pushes elder adults over this line due to conditions that include, but are not limited to, irregular sleep schedules, changes in environment, sensory deprivation, pain, and immobility. The Hospital Elder Life Program (H.E.L.P) at Miami Valley Hospital is a model program that implements bedside interventions to reduce hospital induced decline by helping patients maintain cognitive and physical functioning throughout hospitalization with the goal of discharging the patient with optimal independence and preventing avoidable readmission to the hospital. This program could not function without its most important piece: volunteers. The volunteers play a crucial role at performing the bedside intervention, and the benefit is bidirectional. H.E.L.P. not only benefits elder adults, it benefits aspiring health professionals who learn appropriate bedside manner, communication with elder patients and the healthcare team, and awareness and skills to promote patient safety. H.E.L.P. provides a crucial foundation of compassionate care for undergraduate pre-health professionals as well as reduces negative consequences of hospitalization for elder adults. This poster will describe the goals, interventions, and outcomes of the H.E.L.P. program, and how they impact both elder patients and undergraduate volunteers.

**Category: ABH-7**

**Title: Disparities in Healthcare for ESL Americans**

**Author: Emily Granger**

While the number of native Spanish speakers is on the rise in the United States, the health care system remains a predominantly English speaking environment. After traveling to both Nicaragua and Ecuador and obtaining a Spanish minor, it has become apparent just how difficult it may be for Americans that speak English as a second language (ESL) to navigate the health care system. This study will review literature detailing how the health care system treats those that speak little or no English and pulls from personal experiences volunteering with Global Brigades in Nicaragua and with the University of Dayton's Center for Social Concern in Ecuador. The ESL population is growing in the United States, and low literacy has been linked to poor health outcomes. Not only do ESL individuals face a language barrier, they also often lack health insurance and wait until an emergency to seek medical attention. Translators can be hard to come by and expensive, so patients may rely on their children to translate or simply not communicate something if they do not know how. Programs like the Center for Adult English Language Acquisition (CAELA) are trying to bring awareness to health problems that lead to disparities in care, but health care providers may also be responsible for the gap in health care between native English speakers and ESL patients. This poster examines some of the steps that can be taken to address this problem.

**Category: ABH-8**

**Title: Pros & Cons of Trans-Lingual Health Care Options**

**Author: Nicholaus Cummins**

In our melting pot of a nation, not everyone speaks the same language. This is a major problem when it comes to health care. Many patients are unable to understand what their doctor is trying to tell them. This may come from not understanding just one word of a sentence that defines what the doctor is trying to convey. This is obviously not a new issue and one that many people have trying to solve for a long time now.

Because of this, there are many options for non-English speakers to explore, and many options for health institutions to employ. In this project, I am going to research the most popular methods and rank them in terms of expense, effectiveness, ease of use. Some of the options of trans-lingual communication I will be research include but are not limited to on-demand telephonic interpretation, in-person interpretation, online interpretation. By comparing these methods of interpretation, this poster will discuss the advantages and disadvantages the options available to health care institutions.

## **Addressing the Opioid Crisis (AOC)**

### **Category: AOC-1**

**Title: Patient Perspectives on the Importance of Opioid Medication Disposal**

**Authors: Michael Holbrook and Caleb Tang**

Every day, patients are sent home with opioid prescriptions that exceed their needed usage. As a result, medicine cabinets across the United States are home to unused/expired opioid medications. This is a dangerous proposition, considering that according to AmericanAddictionCenters.org, 50% of teens who abuse prescription drugs get them from their home medicine cabinets. Because pharmacies rarely permit return of unused drugs and drop box locations are few and far between, consumers are left with few options for proper medication disposal.

Our study focuses on the Deterra Deactivation System, an eco-friendly, biodegradable pouch that allows for easy disposal. Through a grant obtained by a Generation Rx, a local organization focused on drug abuse and misuse, patients willing to participate in our study received a Deterra Deactivation System. The goal of the project is to assess whether the system was easy to use, whether our study changed the patient's perceptions, and if the patient would continue to use, or even pay for, the disposal kit.

### **Category: AOC-2**

**Title: Montgomery County Opioid Epidemic Statistics and Current Solutions**

**Authors: Ross Bales and Chase Sawyer**

Montgomery County has faced a dramatic increase in opioid overdoses and fatalities. Montgomery County is not alone in the struggle to combat the opioid epidemic. In 2010, this county was subject to 127 opioid overdose deaths, whereas in 2016, opioids were responsible for 349 overdose deaths in the Dayton area alone. Fentanyl use is directly correlated with this positive trend.

Through a multi-organisational, citywide effort - including the Montgomery County Department of Health, Dayton Fire Department, Community Overdose Action Team, Dayton Metropolitan Medical Response System, and many others - plans are being implemented to curve the growth of overdose death. Initiatives such as Project Dawn, community furnished naloxone (Narcan), enhanced recovery programs, and increased public health knowledge have all impacted the current opioid situation and allowed for a drop in overdose deaths since the latter half of 2017.

Additionally, the habits of current drug users are changing. While many addicts have successfully quit using opioids via community resources, others have started using cocktails of opioids with other illicit substances such

as cocaine or methamphetamine. The widespread distribution of Narcan allows for drug users to reverse the effects of opioids independently of EMS, meaning data is not being collected from such instances, skewing current reports. Sadly, another theory concerning the decreasing trend of overdoses is simply that fatal overdoses have taken a large portion of the susceptible population. This poster will provide current statistics concerning opioid usage, fatal overdoses, and narcan usage in Dayton and Montgomery County.

**Category: AOC-3**

**Title: Innovating Pain Management Options in Dental Care**

**Authors: Jenna Burget and Maddie Thomas**

While volunteering in dental clinics that treat low-income patients, we had the opportunity to observe patient-provider interactions in which the dentist prescribed pain medication. Some patients openly expressed that they did not want to be prescribed anything addictive, whereas many patients urged the dentist to give them the strongest thing they could prescribe. Despite the many efforts that the community has made to mitigate it, the opioid epidemic is growing at an alarming rate in Montgomery County. According to the Montgomery County coroner's report for 2017, 365 people died of drug overdoses between only January and May. Dayton, Ohio is number one in the nation for deaths related to the opioid epidemic, with dentists prescribing 12% of those opioids. Many patients who go in for routine procedures, such as wisdom tooth extractions, are given opioid painkillers even when over the counter pain medications may have been sufficient.

As dentists play a rather large role in prescribing post-operative pain management medications, we believe that the solution to decreasing the number of patients whose addiction begins in the dental clinic lays within current frameworks, such as prescription drug monitoring programs, and preventing opioid prescription for young patients. This poster examines the techniques that have proven to be successful for providing alternative pain management options, such as herbal medications recommended by the National Institute of Health and recommends ways that dental clinics can integrate those techniques into their practices.

## **Community Health (CMH)**

**Category: CMH-1**

**Title: Reaching Out While Paying it Forward**

**Authors: Martha Bervell and Leah Frischmann**

According to health records from 2016, 28.1 million are uninsured in the US; specifically in Ohio, of that same year, 11% of the population is uninsured. As of 2017, there are 50 free clinics in Ohio that work with healthcare professionals and providers to service those who are uninsured or lack the finances to pay for necessary health services. Clinics like Reach Out of Montgomery County in Dayton, Ohio provide healthcare to individuals who lack access to care. At Reach Out of Montgomery County, undergraduate pre-med students and medical students are given the opportunity to both volunteer and learn in a free clinic aimed at serving the underserved population. This project will describe the experiences of undergraduate students at Reach Out by presenting data on number and types of volunteers who have served ROMC in the past year. It will also present data regarding the number of patients, referrals and specific medications prescribed.

**Category: CMH-2**

**Title: This One's for the Health of the Girls**

**Authors: Nicolina Pascua and Carrie Siekierski**

At Reach Out Montgomery County, a free healthcare clinic for the underinsured and underserved in Dayton, there are nights designated to specific groups within the community including pediatric patients and Spanish-speaking patients. However, in our time volunteering at the clinic we noticed a void in the area of women's health. Using these specialized nights as an example, we believe a night designated in part to women's health would positively impact the health of women in the community. Studies show that women with low-income and without insurance have less access and use of preventative care measures related to women's health, such as pap smears and STD testing (Henry J. Kaiser Family Foundation, 2017). Additionally, these women are less likely to receive prenatal care, which can lead to serious health complications for both the mother and baby. By creating a night dedicated to women's health, there would then be an affordable option for more preventative care and screenings to prevent serious illness in a population that has less access to that type of care. To make this a possibility, providers that specialize in gynecology would be needed, as well as funds for equipment and procedures. This poster will present data collected by the Henry J. Kaiser Family Foundation (2017) showing percentages of uninsured women facing various barriers when attempting to receive healthcare, such as foregoing treatment, postponing preventative screenings, or not filling prescriptions, all due to cost. Additionally, we will present our proposal for a women's health program at Reach Out, including plans for education and the possibility of adding preventative screenings.

**Category: CMH-3**

**Title: The Benefits of Student Evaluation and Patient-Physician Communication**

**Authors: Jordan Bergeson and Daniel Link**

While working as volunteers at ReachOut of Montgomery County in Dayton, Ohio we were able to participate in patient-physician interactions. According to Fong Ha and Longnecker (2010), 75% of orthopedic surgeons felt their communication with patients was satisfactory, while only 21% of those patients agreed. Within this study they explained main goals of patient-physician communication are having an exchange of communication within an interpersonal relationship with the patient that allows individuals to be included in the decision making process. Goals for bedside manner are important because physician-patient communication is beneficial to the patient understanding their individual health. According to Williams et. al (2002), more than 33% of elder patients (65 and older), and 80% of patients in public health settings have inadequate health literacy. The inadequacies include comprehension of health vocabulary, compliance with treatment, and inability to find information. Health literacy is defined by the United States Department of Health and Human Services as the capacity to understand, obtain, and process basic health information. A high health literacy and understanding of physician information is important for a patient to understand how to maintain a healthy environment. Without appropriate and clear communication between the patient and the physician these goals could not be met. The purpose of this poster is to describe the importance of effective communication in a physician-patient interaction, the benefits of effective communication, the barriers that patients and physicians face, and the observations student volunteers have made in this area by shadowing providers at ReachOut of Montgomery County.

**Category: CMH-4**

**Title: Community Health Clinics: Stressing the Importance of Providing Primary Care**

**Authors: Sarah Kane and Molly Murray**

Volunteer-Run Free Clinics: Stressing the Importance of Providing Primary Care Reach Out of Montgomery County (ROMC) is a free clinic primarily run by volunteers, which ensures primary care access to the uninsured population of Montgomery County. This poster will further explore the overall importance and crucial role that free clinics play in the lives of individuals who receive this care. Free clinics primarily serve vulnerable groups, such as those with low income, the homeless, and those who have recently lost their jobs. Free clinics, like Reach Out, offer services beyond physician encounters, such as access to diagnostic tests, specialty referrals and prescribed medications. Not only does their existence allow for greater access to care, but eliminates costs that would otherwise accrue from emergency room visits. Benefits of free clinics include overall cost savings, and the management of healthcare for patients who otherwise would not receive it. The purpose of this poster is to describe the services and benefits of free clinics and provide data related to the patients, services, referrals and medications provided at ROMC.

**Category: CMH-5**

**Title: Integrating Service Learning with Healthcare for the Underserved/Uninsured**

**Author: Samuel Dille**

Healthcare has come a long way in terms of accessibility and affordability, with the implementation of the Affordable Healthcare Act, it has become possible for more people to have access to health insurance. In 2016, the Census Bureau released a report stating that the percentage of uninsured dropped from 9.1% to 8.8% from 2016-2017 alone, about 1 million individuals (Jessica C. Barnett and Edward R. Berchick, 2017). However, there are still about 28 million uninsured individuals in the U.S. currently, some of which have the ability to go to clinics such as Reach Out of Montgomery County. Reach Out is a volunteer healthcare organization that provides healthcare to the underserved and uninsured populations in Dayton through community funding and volunteer providers, as well as current and prospective medical students. The clinic offers a unique service learning experience for those pursuing healthcare professions in that individuals get the opportunity to work in a healthcare setting and are directly involved with regular clinic operations. Reach Out addresses the current issues of healthcare and gives aspiring healthcare workers an experience that rivals other volunteer opportunities with service learning. As triage volunteers, students not only get to interact and gain better communication and patient interaction skills, but become an integral part of the diagnostic process. The purpose of this poster is to explain the importance of Reach Out in today's healthcare climate, describe the volunteer experience and present my reflection as a student triage volunteer.

## **Dental Health (DLH)**

**Category: DLH-1**

**Title: Health Effects of Dental Care in Low Income Areas**

**Authors: Jacob Knight and Catherine Matheny**

The Good Neighbor House dental clinic of Dayton, Ohio serves its community by providing affordable dental services to low-income families, whose dental work may not be covered by basic insurance plans. During shadowing experiences at the Good Neighbor House, University of Dayton students had the opportunity to see

many different patients and procedures, the majority of which were tooth extractions. Patients often choose the less expensive extraction instead of the more costly restoration procedures. In this study we will compare dental services at Good Neighbor House and a private dental practice. Specifically, the clinics will be compared as to the number of extractions vs restorations provided. In addition, the cost of these procedures will be compared. Finally, the health effects of extracting teeth as opposed to restorations will be explored.

**Category: DLH-2**

**Title: Starting Young: Motivation Factors in Children's Brushing Habits**

**Authors: Kennedy Hale and Lauren Taylor**

Tooth decay, also known as “dental caries” or “cavities”, is one of the most common chronic conditions of childhood within the United States of America (Walker et al., 2015). If left untreated, tooth decay can cause infections and incredible pain that can lead to multiple detrimental effects in a child’s everyday activities. However, dental caries are preventable. Though regular dental cleanings are necessary, they are not enough. The number one preventative action of cavities is brushing your teeth, which primarily happens at home. Yet, compliance is not always practiced as needed. A study, conducted by Walker et al., investigates what motivates children to brush in order to tailor messages to influence the desired behavior. The study focused on children between the ages of 7-11, finding common themes for internal, interpersonal, and external motivators for brushing. When volunteering at the Good Neighbor House Dental Clinic, multiple pediatric patients came to the clinic with cavities and other oral health issues that could have been avoided through avid brushing. The results from this study could be used to implement materials catered specifically to children rather than the existing material primary focused on targeting adult intervention as opposed to the children’s motivational schemas to influence behavior. By using the motivators discovered in this study, steps could be taken in the clinic to begin to change brushing habits of pediatric patients in hopes of decreasing the presence of dental caries in this age range where children begin to take responsibility for their own oral health. This poster will feature the motivators described in the study, recommend a detailed campaign and create educational materials to provide to patients at Good Neighbor House.

**Category: DLH-3**

**Title: Good Neighbor House**

**Authors: Adriana Figueroa Santiago and Tyler Townsend**

Access to adequate dental care is becoming a significant problem in the United States. In places like Dayton Ohio, people with lower incomes may not have access to a dentist because of lack of dental insurance and increasing prices. Poor oral hygiene can lead to a variety of health issues by creating easy access for bacteria to enter the bloodstream. This can lead to serious complications throughout a person’s body. The Good Neighbor House is striving to help people with low income avoid these problems. The Good Neighbor House is a non-profit, faith based organization located in downtown Dayton. They set out to provide dental, medical and other general services to underserved people in the community. The purpose of this poster is to describe the services provided by Good Neighbor House dental clinic along with costs of these services and to provide data reflecting the numbers of patients served along with services provided.

## Global Health (GLH)

**Category: GLH-1**

**Title: Global Brigades 2018: Highlighting the Water Brigade**

**Authors: Luke Bressler and Logan Roebke**

It is inconceivable to most Americans to think about where their supply of clean water will be coming from, yet this is a largely prevalent issue in Nicaragua where 900,000 people don't have access to safe water (WaterAid, 2014). Not only is this a common predicament, but also a deadly one, where around 300 children in Nicaragua die each year from diarrhea caused by unsafe water and poor sanitation (WaterAid, 2014). Global Brigades, an international relief program, features a Water Brigade within their holistic approach to helping communities improve their health and self-sufficiency. The University of Dayton participated in a water brigade with Global Brigades during the 2017-2018 Winter Break. A Water Brigade consists of teams of students contributing to a long-term project of digging a trench and laying pipe in order to supply water to communities. The UD water Brigade occurred near the rural community of Las Cureñas. It is estimated that only 37% of rural population has access to clean water compared to 63% in cities (Worldbank 2013). Without this access to clean water, families are required to spend hours walking to find clean water sacrificing time that could be spent caring for family or working. Here we present, the problems resulting from the lack of clean water, work done by UD's water brigade to alleviate these problems, and future steps for this community.

**Category: GLH-2**

**Title: What Can Be Done to Enhance Public Health in Rural Nicaraguan Communities?**

**Authors: Aidan Bean and Taylor Pennington**

In January of 2018, a group of University of Dayton students traveled to Nicaragua with Global Brigades, an organization that empowers communities to address barriers to health through integrated approaches. One of these approaches focuses on improving public health in rural communities. While there are many health concerns for the citizens of Nicaragua, one of the more common health concerns is contracting a parasitic infection, which is a problem that can be partially addressed with concrete flooring. Therefore, one of the main focuses of the University of Dayton Global Brigade trip was to improve the flooring in households that have dirt floors. According to Global Brigades, just over 25% of households in the village of Los Encuentros de San Gabriel had adequate flooring such as concrete, ceramic, or brick. The remaining households had mud or dirt flooring. Having dirt flooring can lead to a number of diseases and infections, such as diarrhea, parasitic infections, skin infections, and anemia (Cattaneo et al., 2007). In the past two years that the University of Dayton volunteered in medical clinics in Nicaragua, an average of 11% of patients were diagnosed with a skin infection. Research suggests that replacing dirt floors with cement flooring can decrease this incidence. For example, Cattaneo et al. found a 78% reduction in parasitic infections and a 49% reduction in diarrhea after concrete floors replaced dirt floors. The purpose of this poster is to detail the health problems associated with dirt flooring, demonstrate how Global Brigades is combating these health issues, and present data related to the impact of replacing dirt floors with concrete flooring in rural homes.

**Category: GLH-3**

**Title: Hello, Hygiene!**

**Authors: Matthew Faherty and Abigail Groszkiewicz**

Frequent and proper handwashing is imperative for the prevention of illness and spreading of infection. This is especially true in impoverished and underdeveloped areas, including rural Nicaragua. The illnesses that can be caught in these places are not just the cold and flu, but also include more serious conditions such as infectious skin and diarrheal diseases. In these places, however, the basic knowledge needed to combat these illnesses and infections is absent due to a lack of awareness and education. University of Dayton students experienced this first hand on a recent medical brigade to Nicaragua through Global Brigades, where they spent time in three communities. In each one, they observed the daily habits of the people and noticed a significant lack of proper hygiene routines. For example, after handling livestock or working on construction projects, the Nicaraguans would eat, cook and touch their faces without first washing their hands. Providing an educational session on the importance of handwashing can help lessen the spread of certain communicable infections. The goal of this poster will be to explore what this educational session might include as well as the benefits it could bring to rural Nicaraguan communities.

**Category: GLH-4**

**Title: Serving the underserved in Nicaragua: Challenges in Communication**

**Authors: Abigail Dargie and Lydia Payton**

As a precursor to students' final Pre-Medicine capstone at the University of Dayton (UD), students have the opportunity to choose a medical outreach to participate and reflect upon. One of the options students can pick is a service trip to Nicaragua with an international organization called Global Brigades. While there are many different brigades that students can be a part of, such as Microeconomics and Engineering, UD focuses on a Medical and Dental brigade to bring care to those that are underserved in the Nicaraguan communities. While the University of Dayton and Global Brigades work to overcome the natural communication barrier that arises between the English and native Spanish speakers, there are still challenges that the volunteer physicians and students face while providing care.

Some challenges involve a greater need for translators in general, translators that are proficient in medical terminology, and translators that are familiar with the Nicaraguan dialect and nuances.

In order to overcome these continuing challenges, we have proposed various solutions. The purpose of this poster is to identify the problem, discuss various solutions and how student leaders at UD could implement them appropriately.

**Category: GLH-5**

**Title: Promoting Public Health in Rural Nicaraguan Communities**

**Author: Meghan Wilke**

In January of 2018, I had the opportunity to travel to Nicaragua with Global Brigades. During the Public Health portion of the trip we helped complete projects that would improve the health and lifestyle of some of the community members. These projects were done in rural, underdeveloped communities of Nicaragua. I directly participated in a project that involved mixing cement to create flooring for houses while others contributed in

the building of sanitation stations. These sanitation stations consisted of a toilet, with a septic tank, a shower, and a large sink where fresh water could be obtained.

The need for Public Health projects in Nicaragua is important because it prevents some of the most basic diseases therefore promoting a healthier life. Access to a sanitation station and clean water will promote basic hygiene practices such as washing hands and brushing teeth. It will also lessen prevalence of parasites and diarrhea, which, as stated by WaterAid, killed 300 Nicaraguan children in 2014. Similar to the sanitation stations, concrete flooring in houses will protect from parasites, such as Chagas which is a common parasite in Nicaragua that comes from an insect that lives in the soil.

Access to health care is extremely limited to rural populations in Nicaragua. Providing families with access to sanitary toilets and showers, clean water to wash their hands, and concrete flooring can dramatically decrease the need for medical attention. The purpose of this poster is to provide data regarding the problems experienced from inadequate flooring and lack of sanitary washing/toileting facilities and describe this public health brigade program and how it addresses these health concerns.

**Category: GLH-6**

**Title: A Two-way Conversation: Doctors and Patients Understanding Each Other**

**Author: Eduardo Rive Lockwood**

In Nicaragua, many people living in rural areas have very limited access to a health professional. Through my experience with Global Brigades, I got to interact with many residents in a clinical setting stationed in triage and shadowing physicians. I worked as a translator, transmitting all of the information patients provided to me in triage not only from Spanish to English, but also from common or colloquial language to medical terminology. Most of the time, the patients had to communicate in a long-winded manner just to properly describe a symptom or the patients used common language to describe a symptom in a confusing manner. While shadowing physicians in the clinic, I saw first-hand how physicians would have to connect what information was made available through triage and new information that was provided by the patient in order to make an accurate diagnosis while being able to effectively communicate this information to the patient. While there was no situation where a major miscommunication took place, students and doctors had to take extra steps in order to ensure that all information presented was accurate and that the patients understood what was being told to them. The poster will include several examples of symptoms that were commonly expressed in its colloquial language, direct translation, and its medical translation. This experience can benefit future physicians and students looking to partake in a similar experience in rural areas of Central America as a general guide to better understanding patient reporting of symptoms.

**Category: GLH-7**

**Title: Addressing Women's Health Issues in Nicaragua**

**Authors: Elizabeth Borchers and Michelle Borchers**

We traveled to a small town called Pasa Hondo in Nicaragua with Global Brigades, an organization that aims to help communities become independently sustainable. In Nicaragua, we helped staff medical clinics, built sanitation stations as part of our public health initiative, and dug trenches for pipes up a mountain as part of a long term project to provide communities with clean water. While in the medical clinic, we shadowed the Nicaraguan Gynecologist where we instructed patients on how to use renewable menstrual kits (in Spanish) and observed the physician perform pap smears. We gained insight into many women's health issues that were prevalent for most women there. Due to low income and location, women do not have access to sanitary

products which greatly impacts their health and well-being. It is important for women to keep clean and sanitized as well as have the ability to leave the home for work. According to Femme International, "Poor menstrual management is also the leading cause of reproductive tract infections in women globally" (Femme International). Handing out renewable menstrual kits, such as the ones designed by Days for Girls International partners, in healthcare clinics and medical brigades in Nicaragua will make major contributions to better women's health. This poster will present data on the number of kits dispersed in Nicaragua on our brigade, and a description of Day for Girls initiative to increase awareness on menstrual hygiene in rural Nicaragua.

## **Health Education (HLE)**

**Category: HLE-1**

**Title: We are What We Eat**

**Author: Sherilyn Rogers**

In January 2017, UD students traveled to Nicaragua to engage in several health related projects with the organization Global Brigades. These initiatives included a public health project, a medical and dental clinic and a water project. At the medical clinic, the group provided an educational session for the children of the communities, which focused on dental hygiene. Another portion was group discussion using a basic nutrition poster that was supposed to engage the children and teach which foods are better choices to eat than others. Although the poster had good intentions, upon reflection I came to a conclusion that it was not sufficient enough to help the children, as well as the adults, understand how important nutrition truly is, or guide them on how to make possible changes. Therefore, the goal of this project is to develop a resource to present nutritional information to the children and adults of the communities Global Brigades visits. To better their understanding, the information given will be concise, yet educational, while also taking into consideration what is and is not available to the people of these communities.

**Category: HLE-2**

**Title: Education**

**Authors: Lucas Edwards and Amanda Schleper**

Our trips to Nicaragua in January of 2017 and 2018 presented us with many of the challenges that developing countries face when trying to provide healthcare. During our time in Nicaragua we were able to see hundreds of patients in the three day period when we had our clinic set up. Many of the patients suffered from diseases that could have easily been prevented with healthier day-to-day living recommendations; such as brushing their teeth, washing their hands, and protecting their eyes. According to the World Health Organization (WHO), Nicaraguans lose, on average, about ten years of their healthy life to morbidity and disability. It was evident that some of the American physicians and volunteers had a difficult time communicating proper home health habits to the Nicaraguans.

A solution that we believe will be effective in reducing the number of preventable diseases afflicting the people of Nicaragua would be to leave behind easy to follow pamphlets of healthy day-to-day living. These pamphlets, an example of which will be included on our poster, would emphasize healthy habits such as making sure to cover eyes in the sun, brushing teeth, choosing which foods to eat and much more, thus taking steps to prevent

many of the diseases seen at our clinic. Each chapter of Global Brigades affiliated with different schools could help by teaming up with the Spanish department at their respective university, and working together to compose easy to follow pamphlets that address one of the common preventable diseases. Therefore, each school represented in the brigade could make a pamphlet addressing different preventable diseases. The purpose of this poster is to identify preventable diseases prevalent in Nicaragua and provide guidelines focused on prevention of these diagnoses.

**Category: HLE-3**

**Title: Education as a Source of Prevention in Developing Countries**

**Author: Abigail Robeson**

When it comes to health care and medicine, education is essential to avoiding complications and disease. In developed countries like our own, we have easy access to information regarding health. However, developing countries like Nicaragua have little if any access to such information. Forty four percent of Nicaraguans live in rural areas. The people in these isolated communities are often dozens of miles away from access to medical care, and they have no way to get there. In the United States, primary care doctors are the main source of information regarding basic health. Nicaraguans lack this basic knowledge that is not only accessible, but widely taught in many developed countries. When visiting Nicaragua with the organization Global Brigades, I witnessed this inequality of resources first hand. Many of the cases we treated at the clinic were things that could have been self-managed, or would have been preventable with such education. These people have little to no knowledge about the different risk factors for hypertension and diabetes, two of the diseases that effect their population the most. Education can be a source of prevention when it comes to these issues. Information can be used as a pivotal tool for developing countries to keep these preventable diseases under control. The purpose of this poster is to provide data about the lack of access to medical care and health education in developing countries and relate this data to the frequency of preventable diseases in these communities.

**Category: HLE-4**

**Title: Silent Killers: The Dangers of Diabetes and Kidney Failure**

**Author: Alexa Uniatowski**

According to a 2017 report from the CDC, 30.3 million people (9.4% of the US population) were diagnosed as diabetic. 84.1 million (33.9% of the US population) were categorized as pre-diabetic, meaning if they continued their lifestyle, they would be diagnosed with diabetes in their lifetime. During my volunteer time at Reach Out Montgomery County, I encountered many people that were unaware of their high blood sugar. One patient had a blood glucose reading of 400 and upon urinalysis, it was discovered that the patient was in the early stages of kidney failure, all without any suspicion from the patient. Known risk factors of diabetes include, smoking, obesity, high blood pressure, and high cholesterol (according to the same CDC report). Those who live in poverty do not have the means to buy nutritional food, whether it be due to lack of financial funds or the accessibility to quality grocery stores. Kidneys do more than just produce urine. They filter wastes out of our blood and control the amount of fluid in our body. Uncontrolled diabetes can lead to the gradual loss of kidney function, or kidney failure. Dialysis or a kidney transplant are the only "cures" to kidney failure. The people below the poverty line who cannot afford nutritional food, can by no means afford dialysis or a kidney transplant without

health insurance. Decreased kidney function can lead to anemia, weak bones, damage to the central nervous system, decreased immune response and hyperkalemia, which impairs the function of the heart. This poster will explore the statistics between poverty and the prevalence of diabetes in these populations. This poster will include recommendations for education and Reach Out to help pre-diabetic patients develop strategies to reverse the disease.

## **Medical and Health-related Research (MHR)**

**Category: MHR-1**

**Title: Treating Alzheimer's Disease with Lunasin: Crossing the Blood Brain Barrier**

**Author: Steven Borchers**

Alzheimer's Disease (AD) is a progressive neurodegenerative disease that affects over 5 million Americans and now there are over half a million new cases each year. One of the main causes of AD is the accumulation of the miss-cleaved amyloid precursor protein, creating the amyloid beta 42 variant, which forms hydrophobic plaques in and around neurons. One protein that has shown promise in preventing further neurodegeneration is the soy-based protein Lunasin. This protein has shown its efficacy in *Drosophila* models, yet the blood-brain barrier of mammals poses a problem to the protein's drug capability. Lunasin is a relatively small polypeptide composed of 43 amino acids. One of the main concerns regarding this protein is the poly-aspartic acid tail, creating a hydrophilic region. The blood brain barrier is composed of endothelial cells bound by tight junctions, creating a nearly impenetrable membrane, especially to hydrophilic compounds. This project aims to discern possible drug delivery options that could deliver Lunasin across the blood brain barrier. Some of these systems include using various non-polar coats, nanoparticles, and liposomes. In-depth structural analysis of Lunasin and knowledge of the intricacies of these delivery systems will provide theoretical data. This research can later be used to conduct mammalian studies to test the efficacy of the possible delivery systems, leading to a possible treatment for future Alzheimer's patients.

**Category: MHR-2**

**Title: Listeria Recalls May Happen More Frequently Than You Think**

**Authors: Megan Marasco and John Weis**

*Listeria monocytogenes* is a disease-causing bacterium that causes around \$60 million in damage to the economy yearly. Responsible for the disease Listeriosis, this organism makes thousands of people sick a year and the Center for Disease Control estimates *Listeria* as the third leading cause of death among foodborne illnesses. Those most at risk are pregnant women, the elderly, and those with weakened immune systems. One major prevention method is recalling potentially contaminated food and we are curious how often *Listeria*-associated recalls actually do occur in the United State. From the FDA, the top three reasons for food recalls in the United States in 2016 were cross-contamination of allergens, bacterial pathogens, and foreign matter contamination. According to the FDA in the same year, of the 764 total food recalls reported, 196 were recalls related to *Listeria*. This is almost 4 per week. Since then this trend has not changed, as in 2018 there has already been 8 food contamination recalls due to *Listeria monocytogenes*. Through examining past FDA and other Food Safety Data we will gather data that brings to light the prevalence of recalls due to *Listeria* in the United States. The purpose of this poster is to raise awareness of the disease-causing organism and to show the prevalence of *Listeria* recalls in the United States.

**Category: MHR-3**

**Title: You Don't Need to be an MD to Help Students with Concussions**

**Author: Madeline Gerdes**

Concussions are traumatic brain injuries, typically caused by a blow to the head, which affect the functions of the brain. Effects are usually temporary; however, if not treated properly, they may last beyond the typical recovery period or even become life-long. A team of students and faculty at the University of Dayton has interviewed eight people ages twelve to twenty-one who have suffered from at least one concussion. We discussed with them lasting effects from their concussions as well as how their school personnel helped or hindered their recovery process. Several of the lasting symptoms that were consistent across most participants were headaches, anxiety, excess of emotions, and reduced social interactions. Interviewees also discussed specific ways their school's staff impacted their return to school and academic work. We have found that despite existing programs for returning to learn/play, many school faculty members are not educated on how to accommodate someone who is recovering from a concussion. The long-term goal of this study is to use these results to develop an informational video that will educate school faculty about the effects of concussion—particularly social-emotional effects, which are largely misunderstood and under-reported—as well as what faculty members can do to help the students return to learn. The purpose of this poster is to share the results thus far and to express suggestions for school personnel to help students who are recovering from concussions.

**Category: MHR-4**

**Title: Preventative Impact of Veterinarians in Healthcare and Zoonotic Diseases**

**Author: Mary Ann Gottschilich**

Veterinarians do not solely treat one species. Patients include dogs, snakes, horses, cheetahs, and inadvertently, humans. Treatment of humans is largely due to the emphasis on preventative healthcare practices incorporated into routine veterinary services. This, in turn, has led to decreased spread of zoonotic diseases, such as rabies. The United States has strict regulations for rabies vaccinations, which has led to reduction in human contraction of the rabies virus. According to the CDC, in 2015, the US and Puerto Rico only reported 3 human rabies occurrences. On the other hand, in countries where preventative healthcare is not as strictly regulated, the incidence of rabies is higher. This can be seen in countries, such as India, where the prevalence of rabies is roughly 20,000 cases annually. The need to implement universal protection against the transmission of the rabies virus and stricter regulation of rabies vaccinations is vital. This is especially important to the stray animal population in countries like India. The purpose of this poster is to inform the public on the signs and symptoms of rabies, the prevalence of the virus in certain countries, and offer proposed solutions to reduce the spread of rabies. This will, in turn, lead to a decreased frequency of humans contracting and suffering from the rabies virus and help promote the prevention of similar zoonotic diseases worldwide.

**Category: MHR-5**

**Title: Save the Lunates! The Etiology, Progression, Treatment, and Prevention of Kienböck's Disease**

**Author: Laura Hubacek**

Kienböck's disease is a rare and unpredictable condition that can be described as osteonecrosis of the carpal lunate. Kienböck's disease affects primarily men in their dominant wrist between the ages of 20 and 40 and affects less than 200,000 people in the US. The etiology for Kienböck's disease is still unknown, however there have been theories that it can be caused by trauma to the wrist, from certain arrangements of ulnar variance, and/or as a result of certain anatomical patterns of the vessels that vascularize the lunate. The stages of Kienböck's disease

range from stage I-IV, and there are various surgical treatment options for each of the stages. The earlier Kienböck's disease is detected, the better chance the patient has at preserving range of motion, grip strength, and function of the wrist. There is no way to prevent the onset of Kienböck's disease. It is common for misdiagnoses to occur because most of the early symptoms are comparable to those of a wrist sprain. To be able to reverse the damage to the lunate through revascularization techniques, Kienböck's disease needs to be detected within stage I or II through the use of an arthrogram. For this reason, the healthcare community needs to be more aware of Kienböck's disease to detect it early to ensure the best possible results for the patient. Once Kienböck's disease is diagnosed, there are many treatment options that can be effective. The purpose of this poster is to describe the stages of Kienböck's Disease along with the treatment options of each stage. Prevention strategies will be discussed. Finally, the poster will also include personal reflections from the author regarding her history with the disease.

**Category: MHR-6**

**Title: The Patients' Perspectives: Access to Healthcare in the Alabama Black Belt**

**Authors: Ada Pariser, John Wheat, and Gwendolyn Johnson**

Population medicine research seeks to understand health disparities and help policy makers, healthcare systems, public health departments, and providers to address challenges specific to the populations they serve. How a population perceives its health and healthcare opportunities is a major factor in achieving population health goals. Southern rural African Americans exhibit significant health disparities, but there is limited literature regarding the healthcare challenges they face. We conducted three focus groups involving members of this population in Alabama's black belt to explore their perceptions concerning their healthcare. We audio-recorded and transcribed group discussions, analyzed them for predominant themes, and highlighted themes that resonated among the three groups. Two themes were of primary concern: difficulty maintaining prescription regimens and length of ambulance response times. We recommend that agencies addressing health disparities in this population take these concerns into consideration. This poster will present the findings of this research.

## **Public Health (PCH)**

### **Category: PCH-1**

#### **Title: Effective Ways to Raise the Awareness of Negative Health Effects of Smoking**

**Author: Teresa Wong**

“Quitting smoking lowers your risk for smoking-related diseases and can add years to your life,” (CDC, 2017). According to the Centers for Disease Control and Prevention, cigarette smoking causes more than 480,000 deaths each year in the United States, which is nearly one in five deaths. Furthermore, cigarette smoking increases the risk of getting coronary heart disease because the nicotine in cigarettes can damage the lining of the artery walls, narrow the arteries, increase the blood pressure and the blood clotting, which can eventually cause a heart attack or stroke. According to the recent statistic provided by the Reach Out Clinic of Montgomery County (ROMC) over 60% of their patients with elevated high blood pressure are current or former smokers. Some are even having experiences of severe heart illnesses, such as coronary heart diseases, atherosclerotic peripheral vascular disease, and stroke, due to heavy smoking habits. Therefore, quitting smoking is necessary to maintain a healthy body and avoid any smoking-related diseases. Since ROMC currently do not have a smoking cessation program, this poster will examine different effective techniques in educating the general public about the negative health effects of smoking, and recommend the most effective strategies.

### **Category: PCH-2**

#### **Title: Combative Efforts to Alleviate Dayton's Food Crisis**

**Author: Jason Sanders**

The purpose of this poster is to highlight and raise awareness on the definition of a food desert– as well as describe the current food crisis plaguing Dayton. In addition, the poster will discuss the adverse health and economic ramifications that a food desert presents to individuals living in such areas. Moreover, the poster will display current efforts that are aimed at alleviating Dayton’s food crisis. Lastly, I will hand out information sheets that contain helpful links for people that want to learn more about Dayton’s food crisis.

### **Category: PCH-3**

#### **Title: The Necessity of Free Clinics for Healthcare Access**

**Author: Matthew Wagner and John Schiavone**

According to the United States Census Bureau, there are 28.1 million people that are uninsured and without proper access to healthcare in the United States. These people face many barriers to getting the healthcare they need to live a healthy life. According to the Office of Disease Prevention and Health Promotion (2018), these barriers include the high cost of care, lack of insurance, lack of availability of services, and lack of culturally competent care. This can lead to a multitude of problems such as unmet health needs, unnecessary financial burdens, and preventable hospitalizations. There are many proposed remedies to overcome these barriers for underserved peoples; one is the free clinic. Through our shared experience at Reach Out, we have seen how many people with lack of health insurance can be helped and provided for by free clinics. The purpose of this poster is to describe the services and benefits provided by free clinics, specifically citing data from Reach Out of Montgomery County.

**Category: PCH-4**

**Title: Transportation to Reach Out of Montgomery County**

**Authors: Madeline Dutton and Erin Murphy**

Transportation is one of the many barriers that can prevent a patient from going to see a physician. Reach Out of Montgomery County, being a clinic for those who are uninsured, has many patients that do not have access to transportation. This can make it difficult to get to and from the clinic, whether it is trying to coordinate rides or schedule an appointment around the bus schedule it can sometimes be very frustrating and stressful for patients. About 1,000 people use the public transportation system in Dayton and it stops at each destination approximately once per hour. Someone who does not have the time to wait for the bus would possibly miss their appointment and not receive the proper healthcare they need. According to Syed (2013), 25% of lower income patients have missed or rescheduled appointments due to lack of transportation. These patients are also twice as likely to miss filling a prescription. The purpose of this poster is to propose potential solutions to incorporate transportation to the program and services at Reach Out of Montgomery County.

**Category: PCH-5**

**Title: HPAC through the lens of the Miami Valley**

**Authors: Amanda Ambrosio, Jady Barga, Taylor Fanta, Chinedum Ukandu, Hanna Keller, Jessica Saunders, Dr. John Pascoe, and Susan Howard**

Health Professions Affinity Community (HPAC) is a pipeline program that engages students to become involved in their communities to improve community health while advancing their own aspirations in health professions. Within Montgomery County, there are three major health concerns that include chronic health conditions, birth outcomes, and behavioral health. HPAC empowers students to identify concerns such as these and provides them with the opportunity to invent community health programs to address them. Community action plans incorporate current projects such as public health announcements on drug addiction and health fairs centered on chronic disease. Through this work, youth become a vital community champion for health as they advance into health professions educational pathways. The program currently serves about 2,000 youth in Ohio and they, in turn, serve more than 10,000 Ohioans.