



**WAYNE STATE**

**Center for Emerging and  
Infectious Diseases**

[HTTPS://CEID.MED.WAYNE.EDU](https://ceid.med.wayne.edu)

**Center for Emerging and Infectious Diseases, CEID  
Request for Permanent Charter and Progress  
Report**

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## **WSU Center for Emerging and Infectious Diseases**

**Progress report February 18, 2022**

### **Request for Five-Year Charter**

Name: Center for Emerging and Infectious Diseases (CEID)

Web: <https://ceid.med.wayne.edu>

Reports to the Wael Sakr, MD Interim Dean SOM:

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Laboratory Director

Hossein Salimnia, Ph.D., Professor of Microbiology, Director Microbiology, Detroit Medical

Center; Adjunct Professor, Department of Microbiology, Immunology and Biochemistry

#### **Reports to Wael Sakr, MD, Interim, Dean, WSUSOM**

**The Center is within the SOM and follows all University policies** <https://research.wayne.edu/centers-institutes/policy>

**Advisory/Steering Committee:**

Laurie M. Lauzon Clabo, Ph.D., R.N., F.A.A.N., Dean, School of Nursing.

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Jinping Xu, M.D., Professor and Chair, Department of Family Medicine and Public Health

**Charter:**

**I. Executive Summary:**

Wayne State University (WSU) is a leader in controlling and responding to emerging and pandemic diseases. The Center for Emerging and Infectious Diseases (CEID) has built on experiences with COVID-19 as a resource for Detroit and the state of Michigan in preparing to address current and future infectious diseases including future pandemic diseases. Given temporary approval in July of 2021, this center is the first such center in an urban setting for the state of Michigan. CEID efforts focus on training, research, service and community engagement to address serious public health issues. We have partnered with the Detroit Health Department and MDHHS, State of MI and the US Centers for Disease Control and Prevention (CDC). The center partners with local area hospitals, Physician Groups, Nursing homes, and multiple community groups. We also work internationally with sites on each continent including universities with which WSU has Memoranda of Understanding (MOU), ministries of health, and international organizations including the World Health Organization (WHO) and Pan American Health Organization (PAHO).

**Narrative:**

The formation of the Center for Emerging and Infectious Diseases (CEID) was predicated on the knowledge that residents of Michigan, like other regions of the USA, are at risk of serious illness due to a variety of emerging and re-emerging infectious diseases. COVID-19 is a prime example, but it was not the first and will not be the last threat that Detroiters and Michiganders will be exposed to over the next several decades. Based on past history, we expect that residents of Detroit and those living throughout Michigan and the U.S., will be threatened by future pathogens of pandemic potential (Marani, et al, 2021). Thus, pandemic preparation and planning will be key activities for clinicians, scientists, investigators and collaborators of CEID.

The creation of the CEID reflects the highest level of collaboration within the School of Medicine. When not used for clinical care and training, the unit is a site for research and innovation in highly infectious diseases. It also will serve as a source of generating revenue through other laboratory services for area clinics and hospitals. CEID will serve as a resource for information and expertise in community engagement and pandemic preparedness for policy makers, and health care professionals and organizations. The CEID is one element in the spectrum of public health response to pandemics in particular and infectious diseases in general. Public health experts will provide guidance and assistance with regard to healthcare worker (HCW) exposure and monitoring protocols. CEID also provides education internally to WSU SOM students and externally to the community which is essential in mitigating community fears regarding pandemics.

### A. Mission Statement

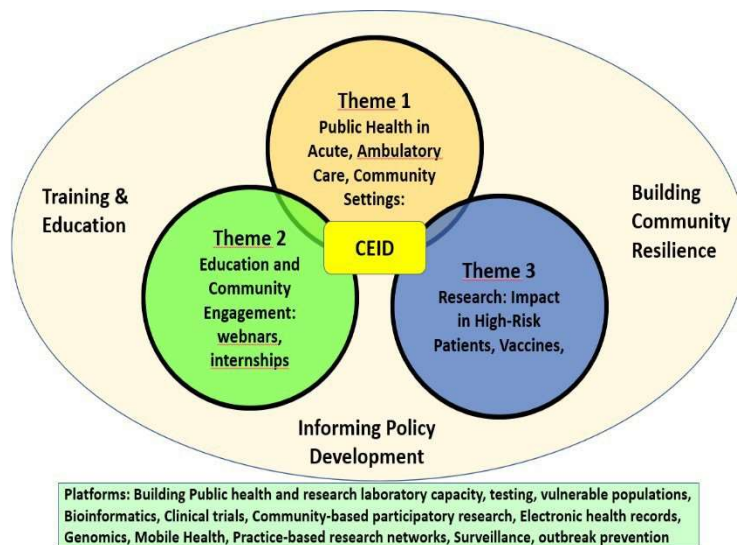
The Center’s mission is to promote health by reducing the burden of diseases of public health importance through addressing health disparities. Our mission is to create equity and inclusion in health systems and provide opportunities for professional training, research and service for high priority emerging infectious disease threats and public service to vulnerable populations. The Center will position Wayne State University School of Medicine as an international leader in public health preparedness and response.

CEID seeks to enhance training, education, research, community engagement and public health infrastructure to address the development of methods to prepare for, prevent and treat emerging and re-emerging infectious and non-communicable diseases.

Activities of the Center will include training, education and research on vaccine development, clinical vaccine

evaluations, introduction and deployment of vaccines for special populations and communities with special attention to underserved populations, development of tools that facilitate recognition and response to outbreaks of emerging infectious disease threats, and research on evidence-based interventions that mitigate the impact of emerging infectious and non-communicable diseases.

*Research* – CEID conducts basic, clinical, and applied research to accelerate development and introduction of vaccines and related interventions to control emerging and re-emerging infectious diseases affecting populations in Detroit as well as other areas of Michigan, the United States, and internationally. CEID is a unique resource within the WSU research programs as well as in Michigan by enabling rapid implementation of research teams to prepare clinical vaccine trials in outpatient, inpatient and community settings. CEID staff and partners conduct these studies in a fashion to expedite safe and rigorous product development in partnership with federal research agencies, industry, foundations, community-based organizations and residents (particularly residents from underserved populations). Within the scope of the clinical trial activities, CEID is dedicated to efforts that foster diversity, equity and inclusion of population groups who have been historically underrepresented in clinical research and trials.



*Academic/Instructional* –CEID offers virtual and in-person seminars to advance knowledge among scientists, clinicians, educators and the lay public to support improved participation in vaccine clinical trials as well as help to accelerate introduction of vaccines for disease prevention. Importantly, CEID provides tailored level-appropriate training in vaccine and emerging infectious diseases for students, staff scientists, residents, post-graduate fellows and faculty. CEID provides education internally to WSU students. Training includes opportunities for how to best to develop, deploy and evaluate clinical and public health interventions that mitigate (and prevent) the effects of emerging and pandemic diseases. The Center provides training opportunities for the medical student Global Health Concentration related to public health and emerging infectious diseases. In addition, education is provided to community residents, members and organizations from local communities to provide facts and reduce fear regarding future pandemics that may occur.

*Service/Public Health/Humanitarian*–Programs of CEID provide the lay public, educators, scientists, healthcare workers and government decision-makers with credible, evidence-based information to guide informed decision-making for participation in clinical trials as well as utilization of proven tools that protect against emerging and re-emerging diseases of epidemic and pandemic potential.

#### *Community Outreach and Engagement*

CEID will be a source of credible and targeted information for the general public and for continuing education. Covid-19 has demonstrated that public understanding of emerging infectious diseases and mitigation strategies is essential to population disease control and prevention. Misinformation and incomplete understanding have increased mortality and morbidity and extended the duration of the pandemic. Some communities have less direct access to information than others and this has exacerbated health disparities. Public education campaigns need to be targeted to specific audiences, delivered through trusted and familiar channels, consistent and sustained (Erku, et al, 2021).

Emerging infectious diseases also create the need for just-in-time information and education. These disease outbreaks are almost always associated with high uncertainty about a range of questions including severity, transmissibility and treatment among others. Answering these questions require specialized knowledge, research expertise and the ability to translate and disseminate the information. Centers such as CEID provide a critical role as a resource for the larger public health community when that face emerging issues that create high uncertainty.

#### **Current Funding Success:**

##### Michigan Department of Health and Human Services (MDHHS) and Detroit Health Department Collaboration:

- The Center for Emerging Infectious Diseases received \$4.3 million in December 2021, in

- federal funding to expand sequencing for COVID-19 and other infectious diseases.
  - The objective is to collect and analyze genomic data to address emerging infectious disease threats and enhance the state's ability to respond to those threats.
  - An additional goal is to increase testing and sequencing capacity in the most populous area of Michigan.
  - WSU will use the funding to increase sequencing capacity in the state starting with SARS-CoV-2 and then other infectious disease threats with the potential for broad community spread.
- Sapphire
    - Funding for the Michigan Sequencing Academic Partnership for Public Health Innovation and Response (MI-SAPPHIRE) is through a CDC Epidemiology and Laboratory Capacity grant MDHHS received.
    - MI-SAPPHIRE activities will include sequence generation and analysis, such as sample collection and sequencing; data processing, storage and sharing; and data interpretation and analytics.

The CEID laboratory is a Clinical Laboratory Improvement Amendments (CLIA) certified state-of-the-art laboratory with a highly-trained staff capable of creating in house testing during infectious Diseases outbreaks. The SAPPHIRE whole genome sequencing (WGS) and bioinformatics laboratory activity is housed in the WSU Integrative Biosciences Building. This activity collaborates directly with the primary CEID laboratory located in the SOM Lande building and will be equipped to handle organisms of public health importance. Currently WSU does not have a CLIA certified laboratory on our campus. This lab will allow Wayne State to generate thousands of in house tests a day to meet with the needs of any disease of epidemic or pandemic potential.

### **Additional Activities and Ongoing Needs**

Additional consultative and education services have been provided in collaboration with the Detroit Health Department including assistance in control of infection in vulnerable populations such as nursing home residents ,prisons ,and homeless, assistance in investigations, deployment of testing, community engagement and vaccine initiatives. The CEID public health programs have been developed and delivered in close coordination with local and state public health organizations that are integral partners to this endeavor. In addition, the CEID has served as a focal point for coordination of WSU pandemic preparedness activities and response in collaboration with local hospitals, clinicians, nursing homes and local, state and national and international public health authorities.

The CEID incorporates activities that address diseases and conditions directly and indirectly caused by infectious pathogens. The goal of the CEID activities around these conditions is to identify improved approaches to prevention of infections in persons with these conditions as well as improved approaches to treatment that reduce risk of hospitalizations and death. The



benefits to the public we serve include the development and growth of future public health, clinical and other healthcare workers how best to manage, prevent and control acute and chronic diseases due to infectious pathogens. In addition, the confluence and interaction of infectious diseases with chronic conditions such as cardiovascular diseases, diabetes and women's health represent an important opportunity for teaching, research and service activities for the Center. Individuals with these conditions are well-known to be at risk for more severe disease due to major pathogens including viruses, bacteria, fungi and protozoa.

The CEID is a center for excellence in helping clinicians and lay persons access resources that help individuals who experience mental health effects of emerging infections and pandemic diseases. This has been a critical need identified in the COVID-19 pandemic and it is now well-recognized that COVID-19 illness can have direct mental health effects on patients as well as caregivers, family members and the public at large. CEID will provide a focal point for coordinated research as well as clinical care and service to the communities served by WSU.

The COVID-19 pandemic has been a perfect storm in the City of Detroit. Despite national efforts, we are still struggling with shortages of testing kits, PPE, contact traces and continue to see more and more mini surges in our city. The pandemic has not only revealed a broken public health infrastructure but also reminded us of the constant looming threat of future pandemics. In line with the mission of WSU, this is the most opportune time to develop a state-of-the-art pandemic preparedness center in the heart of Detroit and serve the community of Detroit. In the event of a pandemic, the predictable costs of not preparing, in human, societal, and political terms, would be huge. Given our focus on serving a predominately underserved population in Detroit, it is critical that decision makers at all levels should consider these issues. Several of the first priority items (comprehensive and collaborative planning, discussing allocation of scarce resources, and planning education and training) take substantial time. Through the CEID, WSU is developing a model for pandemic preparedness excellence in an urban setting and internationally.

WSU is the largest urban research university known for academic and research excellence. Creation of CEID was very much in line with the university's mission of excellence in research, innovation, collaboration, integrity and diversity. John Hopkins University and Nebraska Medical Center are two other universities with on-site pandemic preparedness centers that have successfully served their communities especially during these unprecedented times, and are models for our Center. We believe that creation of CEID was a calling for WSU and the community of Detroit and will truly benefit from this important resource.

During the COVID-19 pandemic, WSU has greatly expanded its role as a key and valued partner for residents, hospitals, governments and health departments. This elevated stature of WSU has arisen out of the tremendous work of Drs. Chopra, Kilgore, Levy and Zervos as well as the extraordinary leadership of President M. Roy Wilson and Provost Laurie Lauzon Clabo. Since the onset of the pandemic in January 2020, WSU activities have included a) providing technical assistance and training for hospital-based clinicians, dialysis staff and long-term care facility

staff to protect themselves, hospital patients, and facility residents in the course of their jobs, **b)** conducting COVID-19 outbreak investigations in various settings including homeless shelters, Long-term care facilities, **c)** developing COVID-19 testing clinics with the City of Detroit and community partners, **d)** conducting community-based outreach for COVID-19 testing to the general public including at-risk seniors, **e)** implementing community-based COVID-19 disease prevention and vaccine educational seminars for clinicians, long-term care facility staff and the general public, **f)** conducting clinical COVID-19 vaccine trials to accelerate development, approval and introduction of safe and effective COVID-19 vaccines, and **g)** implementing COVID-19 vaccination clinics across Southeast Michigan in partnership with local health departments, hospitals, community organizations, and faith-based leaders as well as students and faculty of WSU. Despite these impressive accomplishments, our work has just begun. Tackling the contagion in Detroit, a city with a predominantly underserved population, presents particular challenges as residents, clinicians, health departments and hospitals struggle with the dual challenge of managing the dual challenge of existing chronic disease threats and novel emerging/pandemic diseases.

The need for this new center, and current request for permanent approval is now more urgent than ever before in order to continue to implement effective, sustainable and proactive disease prevention, treatment and control programs for residents across SE Michigan and other regions of Michigan. In the acute phase of the spring surge in COVID-19 cases, our team raced against time to fight the war against COVID-19, modifying our strategy by the hour. Lack of adequate testing kits and dependence on outside labs for our testing needs quickly became the most rate limiting factor for the city of Detroit. We lost hundreds of lives even before they could be tested for the virus.

The SARS-CoV-2 virus is a mighty opponent—deadly and deceiving. Yet, at WSU, we brought together a formidable force to fight COVID-19 and future pandemic threats. The lessons accrued by WSU experts are already paying dividends for achieving better control of COVID-19 surges we see across Detroit and other areas. For example, we see lessons applied in the rapid reaction teams and outbreak control measures now implemented by the team leading these efforts in the Detroit Health Department. WSU and its partners are now poised to have much wider impact. To be better prepared for future pandemics, we propose permanent charter for the continuation of the work of a pandemic preparedness center at WSU which shall serve as a regional preparedness Center for the city of Detroit and beyond.

Creation of the Center and the activities center staff has established a new paradigm for control of emerging and pandemic diseases in Detroit and beyond. Key metrics that will be used to track success of the Center include: **a)** number of residents and neighborhoods touched by programs each month; **b)** numbers and extent of disease control activities conducted (including numbers of cases, institutions affected); **c)** numbers of individuals tested or screened for emerging and pandemic diseases; **d)** number and types of disease control interventions deployed (including vaccination); **e)** measured effectiveness of disease control measures

implemented for residents of Detroit and beyond; **f**) number of reports published for general readership and well as peer-reviewed scientific publications for academic audiences; **g**) media appearances; **h**) number of grants submitted and revenue generated from grants seeded by investments and **i**) public, hospital and government leadership confidence in the WSU Center as a result of its implemented programs as assessed by regular surveys of Center constituents.

### **Staff and Governance Structure**

CEID staff is composed of experts with established track records in clinical infectious diseases, product development research, clinical trials, epidemiology of infectious diseases, mental health environmental health, health communication, pandemic preparedness, engineering, computer science, anthropology, social-behavioral science, and education. For this reason, CEID draws on expertise from WSU to maximally leverage expertise that facilitates rapid implementation of inter-disciplinary programs. The COVID-19 pandemic has dramatically altered local, state, and national mindsets toward infectious disease threats including pandemic diseases. The pandemic revealed deep and broad gaps in our clinical and public health infrastructure that is ready to respond to future pandemics. In line with the mission of WSU to support urban communities at risk for health disparities, the CEID has the expertise and capacity to support and collaborate with local neighborhoods, hospitals and public health agencies to deliver state-of-the-art diagnostics, treatments and preventive strategies for the benefit of all residents in Detroit and other communities.

The Center has provided collaborative opportunities with community-based organizations, non-profit-institutions, corporations, and public health organizations serving Detroit, Southeast Michigan and beyond to translate research findings for direct and indirect benefits in improving community health and reducing health disparities among minority race/ethnic group residents. The Center will continue to seek to improve resident wellness, disease prevention and reduction in their severe health outcomes leading to hospitalization and death.

Collaborations: The Center has built on existing collaborations worldwide to serve as a hub for ongoing Global Health initiatives

Organization: *The organizational structure is shown in the **Appendix A**.*

### **Background information that led to the decision to develop a center.**

Covid 19 has focused national attention on emerging infectious diseases, the need for pandemic preparedness, and the critical role of multi-disciplinary approaches. According to the White House Report on pandemic preparedness “Unless we make transformative investments in pandemic preparedness now, we will not be meaningfully prepared (for the next event)” (American Pandemic Preparedness: Transforming Our Capabilities , 2021, p. 5). In addition, the Covid 19 pandemic has created a number of important extramural funding opportunities.

Formation of the CEID was predicated specifically on the knowledge that residents of Michigan, like other regions of the USA, are at risk of serious illness due to a variety of emerging and re-emerging infectious diseases. COVID-19 is a prime example, but it will not be the last threat that Detroiters and Michiganders will be exposed to over the next several decades. Based on past history, we expect that residents of Detroit and those living throughout Michigan, the U.S. and internationally, will be threatened by future pathogens of pandemic potential. Thus, pandemic preparation and planning will be a key activity for clinicians, scientists and collaborators of the CEID.

**B. How will the proposed center activity differ from similar ongoing [research, teaching, service] activity that currently exists within the university?**

CEID is a unique resource within the WSU SOM research programs as well as in Michigan by enabling rapid implementation of multi-disciplinary research teams to prepare clinical vaccine trials in outpatient, inpatient and community settings. CEID staff have conducted these studies in a fashion to expedite safe and rigorous product development in partnership with federal research agencies, industry, foundations, community-based organizations and residents (particularly residents from underserved populations). CEID also serves as a focal point for coordination of WSU pandemic preparedness activities and response in collaboration with local hospitals, clinicians and local, state and national public health authorities.

Our collaboration with the Detroit Health Department within the CEID has provided training, public health and research opportunities in communicable and non-communicable disease. It is worth noting that professional students are now trained in a collaborative environment and will continue to provide excellent opportunities for training of students on how best to develop, deploy and evaluate clinical and public health interventions that mitigate (and prevent) the effects of emerging and pandemic diseases. In addition, education will also be provided to community residents, members and organizations from local communities to provide facts and reduce fear regarding future pandemics that may occur.

The CEID is a center for excellence in helping clinicians and lay persons access resources that help individuals who experience mental health effects of emerging infections and pandemic diseases. This has been a critical need identified in the COVID-19 pandemic and it is now well-recognized that COVID-19 illness can have direct mental health effects on patients as well as caregivers, family members and the public at large. The CEID will provide a focal point for coordinated research as well as clinical care and service to the communities served by WSU.

**D. Collaborative nature of the proposed center.**

CEID staff is composed of experts with established track records in clinical infectious diseases, product development research, risk and crisis communication and risk mitigation, public health preparedness, clinical trials and epidemiology of infectious and non-communicable diseases.

For this reason, CEID has drawn on expertise from WSU to leverage diverse expertise that facilitates rapid implementation of programs necessary for effective response.

CEID's collaborate activities also extend to several public health partners, including the Detroit Health Department, County Health Departments, local hospitals, and nursing homes. The M-SAPHIRE program also creates important collaborative opportunities with the academic labs at the University of Michigan, Michigan State University, and Michigan Tech. Additional collaborative activities may be possible with the University of Michigan's Center for Emerging Infectious Diseases-Public Health Prepared program.

#### **E. Public health benefit**

The CEID has provided collaborative opportunities with community-based organizations, non-profit-institutions, corporations, and public health organizations serving Detroit, Southeast Michigan and beyond to translate research findings for direct and indirect benefits in improving community health and reducing health disparities among minority race/ethnic group residents. The CEID will also seek to improve resident wellness, disease prevention and reduction in their severe health outcomes leading to hospitalization and death.

The COVID-19 pandemic has dramatically altered local, state and national mindsets toward infectious disease threats including pandemic diseases. The pandemic revealed deep and broad gaps in our clinical and public health infrastructure that is ready to respond to future pandemics. In line with the mission of WSU to support urban communities at risk for health disparities, this Center has the expertise and capacity to support and collaborate with local neighborhoods, hospitals and public health agencies to deliver state-of-the-art diagnostics, treatments and preventive strategies for the benefit of all residents in Detroit and other communities.

The CEID has incorporated activities that address diseases and conditions directly and indirectly caused by infectious pathogens. The benefits to the public we serve include the development and growth of future public health, clinical and other healthcare workers how best to manage, prevent and control acute and chronic diseases due to infectious pathogens. Importantly, vaccine-preventable cancers due to human papillomavirus (HPV) and hepatitis B virus (HBV) are due to infectious pathogens that afflict hundreds of thousands of Americans each year. In addition, the confluence and interaction of infectious diseases with chronic conditions such as cardiovascular diseases and diabetes represent an important opportunity for teaching, research and service activities for the CEID. Individuals with these conditions are well-known to be at risk for more severe disease due to major pathogens including viruses and bacteria. The goal of the CEID activities around these conditions will continue to identify improved approaches to prevention of infections in persons with these conditions as well as improved approaches to treatment that reduce risk of hospitalizations and death.

## **F. Benefit to Wayne State University**

1. **Recognition**—CEID provides opportunities to expand the WSU brand to remain a recognized national and international leader in education, research and commitment to our community.
2. **Training**—Mutually beneficial partnerships provide training opportunities for WSU faculty, fellows, residents and staff in a globalized world.
3. **Research**—Expand opportunities for research funding, to result in new discoveries, improvements in health care and resources to institutions locally, nationally and globally.
4. **Talent**—Top candidates for students, residency, fellowship and faculty positions are increasingly looking toward institutions providing global opportunities.
5. **Local**—In 2020-2022, Trillions of dollars spent on COVID-19/Emerging Infectious Diseases. Obtainment of external funding provides for job creation in Detroit. Specifically, providing opportunities will prevent brain drain and allow for further investment in the city. Additionally, health programs can be adapted to address barriers to good health within low-income communities in the City of Detroit.
6. **Humanitarian**—Strengthening health for vulnerable populations around the globe is central to the WSU and CEID vision of transforming lives and communities through health and wellness.

## **II. Governance/Organization (for bios of center faculty see appendix B)**

- A. Leadership: Center Co-Directors—Paul Kilgore, M.D., M.P.H. , Teena Chopra, M.D., M.P.H., Marcus Zervos, M.D., Matthew Seeger, Ph.D.
  1. How will the current responsibilities of the named directors be impacted by this new responsibility? This new responsibility is supported by the Dean SOM.

Drs. Zervos, Kilgore, Chopra and Seeger serve as Co-Directors for CEID. Dr. Zervos is now Head, Infectious Disease HFHS and Assistant Dean for Global Affairs, WSU SOM.

Dr. Kilgore is Associate Professor, Dept of Pharmacy Practice, Director of Research in the Department of Pharmacy Practice, WSU EACPHS, Adjunct Professor, Department of Family Medicine and Public Health Sciences, WSU SOM and Senior Investigator, Global Health Initiative, HFHS.

Dr. Chopra is Professor of Medicine, and Corporate Medical Director of Infection Prevention, Detroit Medical Center. Dr. Chopra oversees infection control programs for the Detroit Medical Center as well as has

been involved in COVID-19 epidemiologic research and COVID-19 vaccine studies.

Dr. Seeger is currently Dean, and Professor of Communications at WSU, with extensive experience in risk and crisis communication and disaster preparedness.

The leadership team has a demonstrated successful record of working together, including participating collectively decision making. In addition, the leadership team brings multi-disciplinary approaches to what is a multi-disciplinary challenge.

In addition, their current responsibilities are extremely well-aligned with the leadership team's proposed responsibilities for CEID.

Drs. Zervos and Kilgore work jointly on COVID-19 vaccine and other research program development in Detroit and have collaborated over the past 9 years on a variety of research projects focused on vaccine-preventable and emerging infectious diseases.

Dr. Zervos has an established track record of leadership and engagement around issues of emerging infectious diseases in Detroit, the United States and overseas through training and education, multi-institutional collaborative studies on antimicrobial resistant pathogens, control of healthcare associated infections and vaccines.

Dr. Kilgore brings multi-disciplinary and public health perspective with extensive experience in clinical and public health research, education, applied epidemiologic studies of infectious diseases, field intervention trials, laboratory-based infectious disease surveillance and large-scale multisite surveillance and interventional studies.

Dr. Chopra brings clinical and research experience on emerging and antimicrobial resistant infections, pandemic preparedness, medical professional training and education, infection control, hospital epidemiology, antimicrobial stewardship and disease control in long-term care settings.

Dr. Seeger is co-author of the CDC's program for Crisis and Emergency Risk Communication, which is used to guide pandemic response. In addition, he has organized the "PIO and the Right to Know" programs with DTE for the last years. He presented dozens of communication workshops and seminars to public health professionals.

While the co-directors have specialized areas of expertise, they will make decisions about center activities collectively. The co-directors bring an interdisciplinary perspective to the issue of emerging infectious diseases which is appropriate given the nature of challenges we face.

Covid 19 has demonstrated that emerging infectious diseases are complex, multidisciplinary problems requiring diverse yet closely integrated strategic responses. The recent White House report in Transforming Pandemic Preparedness noted:

“The United States must fundamentally transform its ability to prevent, detect, and rapidly respond to pandemics and high consequence biological threats. This would include investments in critical scientific goal areas—vaccines, therapeutics, diagnostics, and early warning—as well as associated investments in strengthening disease surveillance, health systems, surge capacity, personal protective equipment (PPE) innovation, biosafety and biosecurity, regulatory capacity, and global pandemic preparedness” (American Pandemic Preparedness, 2021).

Pandemics are the kinds of challenges that are often described as wicked problems because of their complexity, multidimensionality, and interconnected nature. These problems lack clarity in terms of scope and strategic response, and face real-world constraints and complexities that complicate solutions. The treatment of pandemics and emerging infectious diseases will require coordinated multidisciplinary approaches, engaged and applied research, translational programs and sustained efforts to resolve. CEID brings this approach as reflected in its structure

2. Center Key Faculty

In addition to Co-directors key faculty include Hossein Salimnia, Ph.D., Professor of Microbiology, Director Microbiology, Detroit Medical Center. Trini Matthew MD, CEID; Randy David PHD, Detroit Health Department

3. Discuss the reporting lines (See **Organizational Chart, Appendix A**).

Center Co-Directors and future Assistant Directors will work in a coordinated and collaborative fashion to develop and lead activities including grant writing and submission, development of educational materials, community engagement and clinical trials as well as field and laboratory studies. Center administrator will oversee business, financial and regulatory operations in coordination with Center Co-Directors and



the Center Program Manager. Execution of studies will be supervised by Group Coordinators (Group 1: Community and Field Studies; Group 2: Clinical Trials; Group 3: Laboratory Studies, Group 4: International platforms).

4. Advisory Board.

Advisory Board/steering committee members is composed of broad representation from WSU Units as well as community members, local experts, basic scientists, clinical scientists and multi-disciplinary faculty. Board members serve in their individual capacity as well as serve as liaisons to their respective communities, departments and institutional units. Individuals to serve in the first Board for the CEID are now being selected.

B. Personnel:

1. Participating faculty. Members of the Center include but are not limited to Marcus Zervos, SOM, HFHS; Paul Kilgore, EACPHS, SOM, HFHS; ; Teena Chopra, WSU SOM; Arun Vijaya, WSU SOM; Gina Maki, HFHS; Jelena Verkler, M.P.H., HFHS, Samia Arshad MPH, HFHS; Trini Mathew MD, Katherine Reyes, M.D., M.P.H. and Tara Kimbason, M.D.; Susan Davis, Pharm.D., WSU EACPHS, HFHS; Michael Rybak, Pharm.D., M.P.H., Ph.D., WSU EACPHS; Joe Fava, Pharm.D., WSU EACPHS; Brittany Stewart, Pharm.D., WSU EACPHS; Weisong Shi, Ph.D., WSU CLAS, Computer Science; Shawn McElmurry, Ph.D., P.E., COE; Linda Kaljee, Ph.D., Global Health Initiative, Henry Ford Health System; Denise Fair, MBA; Michael Mossing, Ph.D., DHD; Ijeoma Opera, M.D., WSU, Julie Comstock, M.D., WSU, Jinping Xu, M.D., WSU; Wanqing Lui Ph.D., WSU Phil Levy MD.
2. Participating staff are enumerated in the detailed WSU SPA approved budgets related to externally funded grants.

**III. Facilities**

1. CEID activities are conducted within existing space of WSU. Clinical trial space for conduct of vaccine and other clinical studies is provided at WSU (Mott Clinical Trials Center) and Henry Ford Hospital (HFH clinical trials unit). Renovation will be required for the laboratory at Lande, with approved existing funding by external sources (MDHHS SAPPHIRE award). SAPPHIRE whole genome sequencing is also being done at the WSU Integrative Biosciences (IBio) building, currently for SARS-CoV-2 whole genome sequencing.

#### **IV. Budget**

Financial support for the center/institute (e.g., endowment interest, existing faculty research grants, external support, in kind support). **See appendix C for SAPPHIRE budget**

The established Center programs is currently supported almost entirely through external funding with exception of space. A small budget has been provided by the School of Medicine. External grants will continue to provide the primary funding for CEID. The salaries of the four-co leads are supported by their current units.

As community, hospital, government and health department needs change, the Center will remain nimble and responsive to changing situations and environments across Detroit and beyond. As such, the Center will be a long-serving entity for Wayne State due to the importance of the pandemic preparedness and the unlikely future of a world without pandemics.

#### **V. Strategic Focus Areas of the Center**

*The CEID strategic plan is shown in **Appendix D**.* The Center Leadership and staff have been focused on development of clinical, basic and applied research that focuses on reducing health disparities associated with infectious pathogens causing acute (e.g., *S. aureus*, hepatitis A) and chronic diseases (e.g., shingles secondary to chronic infection with varicella-zoster virus) in the United States and overseas. Special attention is given to pandemic disease preparedness with special attention to development of clinical, laboratory and preventive strategies that will mitigate the effect of future pandemics on the health of Detroiters, Michiganders, and other residents of the United States and other countries.

Because infectious pathogens are associated with complex health conditions, the Center teaching, research and service activities have been conducted in a multidisciplinary fashion that facilitates design, evaluation and implementation of solutions adapted to populations affected by specific pathogens. Notably, the Center has actively cultivated collaborations with the Detroit Health Department and other organizations to implement programs that benefit community resident's health and reduce disparities related to acute infectious diseases and chronic conditions that may be caused by (e.g., HPV, HBV) or exacerbated by (e.g., cardiovascular diseases, diabetes) infectious pathogens.

Student training initiatives and global health work are shown in **Appendix E and F**.

**VI. Center Project Listing: CEID Progress to date. See appendix G for activities report, and F for summary to WSU government relations, for local state and federal funding opportunities.**

2021-2026 Projects:

**Public Health**

**SAPPHIRE**

- The Center for Emerging Infectious Diseases received 4.3 million dollars in federal funding to expand sequencing for COVID-19 and other infectious diseases
- Funding for the Michigan Sequencing Academic Partnership for Public Health Innovation and Response (MI-SAPPHIRE) is through a CDC Epidemiology and Laboratory Capacity grant MDHHS received.
- Objective is to collect and analyze genomic data to address emerging infectious disease threats and enhance the state's ability to respond to those threats.
- WSU will use the funding to increase sequencing capacity in the state starting with SARS-CoV-2 and then other infectious disease threats with the potential for broad community spread.
- MI-SAPPHIRE activities will include sequence generation and analysis, such as sample collection and sequencing; data processing, storage and sharing; and data interpretation and analytics.

**DHD-WSU collaboration**

Center faculty continue to work in partnership with the Detroit Health Department in a variety of Public Health Initiatives, including infection prevention in vulnerable populations (nursing homes and homeless shelters), vaccine hesitancy, investigations of outbreaks, testing recommendations.

**Research external grants**

*HFH prime, WSU subcontract (Kilgore, Zervos Co PI)*

1. A Phase 3, Randomized, Stratified, Observer-Blind, Placebo-Controlled Study to Evaluate the Efficacy, Safety, and Immunogenicity of mRNA-1273 SARS-CoV-2 Vaccine in Adults Aged 18 Years and Older  
Sponsored by Moderna.  
Budget: \$12,400 per subject plus start up fees and other compensation

Sample Size: 720 enrolled on site, 30,000 overall

Short Title: Cove Study

Description: This study has enrolled over 30,000 participants nationally to evaluate the efficacy of mRNA-1273 SARS-CoV-2 Vaccine in the prevention of Covid-19/Severe Covid-19 and evaluate the safety and reactogenicity of 2 injections of mRNA-1273 given 28 days apart. Post vaccination there is a 5 year follow up period to further assess immunogenicity, and booster safety and effectiveness and immunogenicity.

2. A Randomized, Double-blind, Placebo-Controlled Phase 3 Study to Assess the Efficacy and Safety of Ad26.COVS.2 for the Prevention of SARS-CoV-2-mediated COVID-19 in Adults Aged 18 Years and Older

Sponsored by Janssen.

Budget: \$12,000 per subject plus start up fees and other compensation

Sample Size: 400 enrolled on site, 45,000 overall

Short Title: ENSEMBLE 1

Description: This study has enrolled over 45,000 participants internationally to evaluate the efficacy of single dose Ad26.COVS.2 in the prevention of molecularly confirmed moderate to severe/critical COVID-19, as compared to placebo, in adult participants. Post vaccination there is a 5 year follow up period to further assess immunogenicity, and booster safety and effectiveness and immunogenicity.

3. A Randomized, Double-blind, Placebo-controlled Phase 3 Study to Assess the Efficacy and Safety of Ad26.COVS.2 for the Prevention of SARS-CoV-2-mediated COVID-19 in Adults Aged 18 Years and Older

Sponsored by Janssen

Budget: \$12,000 per subject

Sample Size: 200 enrolled on site; 30,000 overall

Short Title: ENSEMBLE 2

Description: The study enrolled participants to evaluate the efficacy of two doses of Ad26.COVS.2 in the prevention of molecularly confirmed moderate to severe/critical COVID-19, as compared to placebo, in adult participants. Post vaccination there is a 5 year follow up period to further assess immunogenicity, and booster safety and effectiveness and immunogenicity.

4. A Phase 2/3, Two-Part, Open-Label, Dose Escalation, Age De-escalation and Randomized, Observer-Blind, Placebo-Controlled Expansion Study to Evaluate the Safety, Tolerability, Reactogenicity, and Effectiveness of mRNA-1273 SARS-CoV-2 Vaccine in Healthy Children 6 months to < 12 Years of Age  
Budget: start up May 26, 2021, per subject budget \$12,000:

Sample Size: site enrollment 302 subjects; 6,000 overall

This is a Phase 2/3, two-part open-label dose escalation, age de-escalation and randomized observer-blind, placebo-controlled expansion study conducted in children from 6 months to 12 years of age, divided into age cohorts of 6 to < 12 years, 2 to < 6 years, and 6 months to < 2 years of age. The study will initiate with the oldest group and age de-escalate, and within each age group will initiate with 'Part 1' (dosage determination) and advance to 'Part 2' (expansion at selected dosage level). Two dosage levels will be evaluated in the 6- to < 12-year and 2- to < 6-year age cohorts (50 and 100 µg) and 3 dosage levels (25, 50, and 100 µg) in the 6-month to < 2-year age group. The mRNA-1273 investigational vaccine or placebo will be administered as 2 intramuscular (IM) injections 28 days apart. . Post vaccination there is a 5 year follow up period to further assess immunogenicity, and booster safety and effectiveness and immunogenicity.

*WSU prime (Mott Clinical Trials Center studies)*

1. Janssen VAC18193RSV3001
  - a. A Randomized, Double-blind, Placebo-controlled Phase 3 Efficacy Study of an Ad26.RSV.preF-based Vaccine in the Prevention of Lower Respiratory Tract Disease Caused by RSV in Adults Aged 60 Years and Older (EVERGREEN)
2. GSK 217212
  - a. A phase II, observer-blind, randomized, controlled study to evaluate the immunogenicity and safety of a varicella vaccine at various potencies compared with Varivax, as a first dose, administered in healthy children in their second year of life.
3. Janssen – COVID Vaccine -VAC31518COV2015
  - a. VAC31518COV2015 - Randomized, Double-blind, Phase 2 Study to Evaluate the Immunogenicity, Reactogenicity and Safety of Ad26.COV2.S.529 Administered as Booster Vaccination in Adults 18 Years of Age and Older Who Have Previously Received Primary or Booster Vaccination with Ad26.COV2.S or Primary and Booster Vaccination with BNT162b2.
4. ICON study # 2741/0008\_RSV vaccine
  - a. Contract under review at WSU.

*Other grants Submitted:*

Funding agency: FDA. Project title: Diversity, Equity and Inclusion Driven Engagement and Education to Enhance Representation of Underserved Residents in Clinical Trials (1 Year Project Budget: \$801,000)

Funding agency: US CDC. Project title: Strengthening Healthcare Infection Prevention and Control and Improving Patient Safety in the United States (5 Year Project Budget: \$4.7 million)

Funding agency: (NCI/CDC/NIAID). Project title: SeroNet (Project Budget: \$5 million)

Funding agency: Infectious Disease Society of America/Society for Healthcare Epidemiology of America. Project title: Gun Shot-associated Wound Infections. (Project budget: \$200,000)

Grants in Development:

R01: CDC-Long-Term Effects of Disasters on Health Care Systems Serving Health Disparity Populations (R01- Clinical Trial Optional)

CDC-RFA-GH22-2267 Global Emergency Response and Recovery Partner Engagement RFA

Therapeutic and prophylactic use of IgY antibodies against SARS-CoV-2 and other emerging pathogens.

External grant funds have been used for initial start-up activities for preparation of external grant application, completion of project regulatory and ethical approvals as well as hiring of Manager staff and other Center Activities

CEID is developing a webinar series as part of the community engagement mission. We have also been asked to provide the inaugural webinar for the University of Michigan's Public Health Prepared webinar series. MDHHS has asked CEID to also explore co-branded webinars with other centers and research programs

CEID co-directors authored a commentary on lessons learned from Covid-19 and paths forward for the *Detroit Free Press*. This commentary appeared on the front page of both the print and on-line editions (<https://www.freep.com/story/opinion/contributors/2022/02/01/covid-19-infectious-disease-doctor/9290350002/>)

A number of other media have featured CEID co-directors. These and other center activities have also been featured in CEID social media channels.

CEID also developed a website to promote and publicize center activities. <https://ceid.med.wayne.edu>

## **Charter**

### **1. Center for Emerging and Infectious Diseases**

- A. There shall be a Center for Emerging and Infectious Diseases whose mission will be to enhance and extend the SOM's existing research infrastructure to specifically address the development of vaccines and other research that treat and prevent emerging and re-emerging infectious and non-communicable diseases and enhance public health preparedness. In pursuing this mission, the Center shall obtain and expand external funding support from both private and public sources. The Center will conduct research on vaccine development, hesitancy and deployment, clinical vaccine evaluation, introduction and deployment of vaccines for special populations and communities with special attention to underserved populations; research and development of tools that facilitate surveillance, recognition and response to outbreaks of emerging infectious disease threats and research on socio-cultural factors that accelerate uptake of evidence-based interventions that mitigate the impact of emerging infectious and non-communicable diseases in Detroit, Southeast Michigan and all regions of Michigan and the United States and internationally.

### **2. Personnel**

- A. The Center for Emerging and Infectious Diseases shall be managed by co-directors appointed by the Dean SOM and serving at his/her pleasure. These directors shall report to the Dean SOM or his/her designee.
- B. The staff of the CEID includes, as necessary, research faculty paid fully or in part from Center funds, faculty and staff from SOM department, research scientists, research associates and assistants, clerical/technical support, and such other personnel as may be needed to carry out the Center's mission. In the case of a participating faculty member holding tenure, or with tenure-track status, his/her tenure or tenure track status in his/her academic unit.
- C. The primary responsibility of the staff in the CEID is to conduct basic and applied research in select areas of emerging infections, to conduct community engagement activities, to obtain extramural funding in support of the research, and to develop commercially significant products and processes. Staff paid fully from CEID are not required to undertake teaching responsibilities but may have the opportunity to direct the research of graduate students or to engage in other teaching activities as may be mutually agreeable to them, the appropriate academic unit, and the director of the Center. Staff may teach specialized courses and workshops from time to time as the need arises.

### **3. Governance**

- A. The primary responsibility for the day-to-day operation of the CEID shall reside with the Center Co-Directors and shall also draw upon the advice and counsel of an advisory committee composed of deans and faculty from the participating schools and colleges. The advisory committee was appointed by the Co-Directors after consultation with the Dean SOM or his/her designee and meet regularly with the directors to give advice on the operation and development of the Center.
- B. The CEID has an advisory/ steering committee to give guidance and direction in setting priorities, in assessing results, and in identifying new opportunities. Committee members were appointed by the director(s) after consultation with the Dean SOM or his/her designee. Membership shall include representation from industry, the university administration, and the participating departments.

### **4. Operating and Financial Procedures**

- A. The CEID follows all operating, personnel and financial procedures that apply to academic units in the university.
- B. In seeking external funding to support research and other activities, the CEID conforms to the university's standard grant application procedures and to the university research policies.
- C. The CEID is governed by standard university budgetary and financial procedures; and it annually submits a budget for approval by the Dean SOM in the course of the regular budget review process.
- D. The CEID shall be periodically audited by the Internal Audit department. It may also be subject to such additional audits, by the state auditor or others, as are periodically conducted in the university or that may be specially conducted in connection with specific funding sources for the Center.

### **5. Review**

- A. The CEID shall prepare an annual report for the Dean, SOM or his/her designee describing its research accomplishments and industrial interactions as they relate to its mission.



- B. Every five years following the adoption of its permanent charter, the CEID institute shall undergo a comprehensive review in accordance with the existing Statute on Centers approved by the Board of Governors.

## VII. **Appendices**

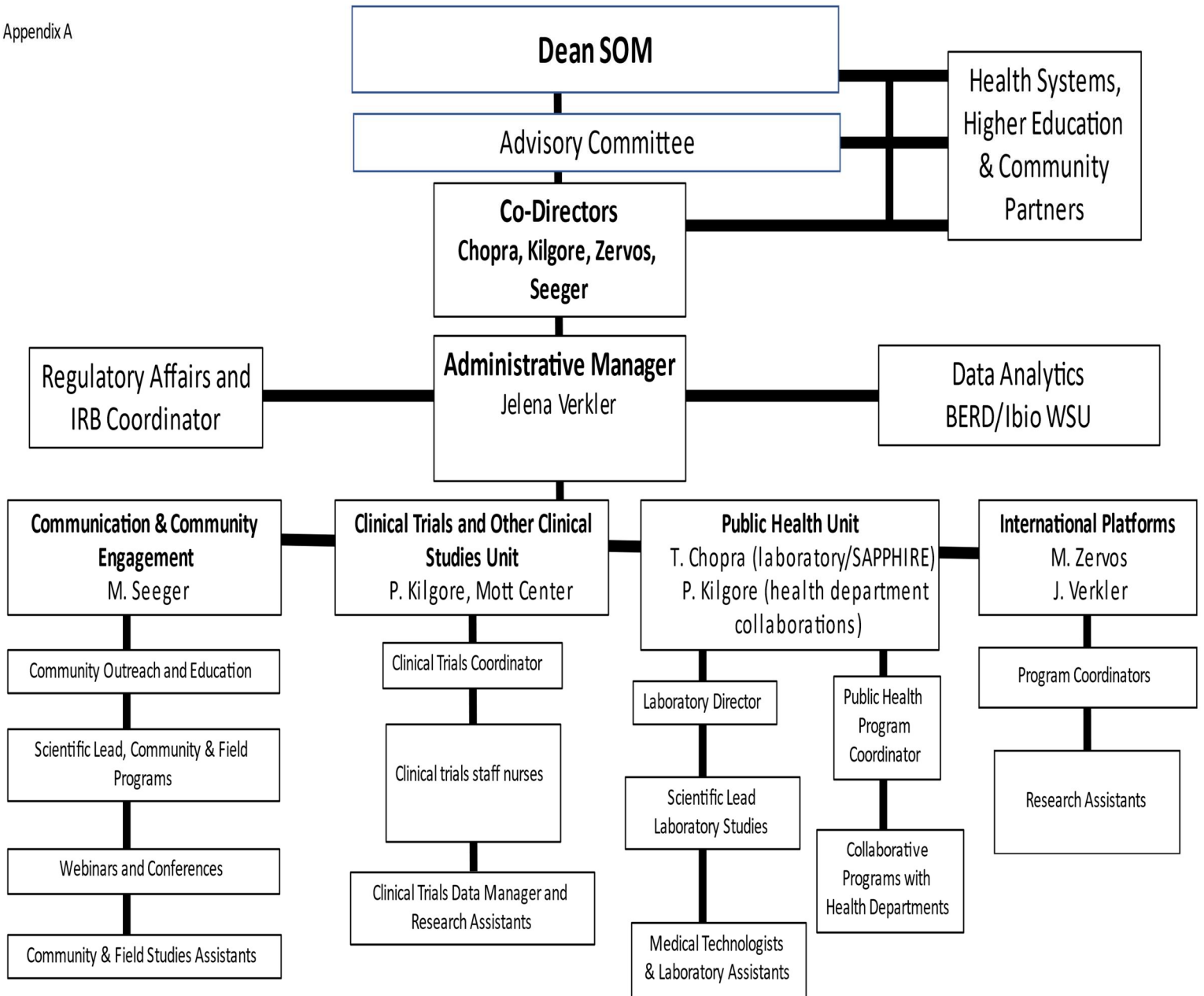
- A. Organizational Chart
- B. Leadership bios
- C. Budget
- D. Strategic plan D
- E. Medical student global health concentration, curriculum
- F. Global health annual report
- G. Report on Current Activities.
- H. Summary to WSU government relations

## VII. References

American Pandemic Preparedness: Transforming Our Capabilities (September 2021). <https://www.whitehouse.gov/wp-content/uploads/2021/09/American-Pandemic-Preparedness-Transforming-Our-Capabilities-Final-For-Web.pdf>

Erku, D. A., Belachew, S. A., Abrha, S., Sinnollareddy, M., Thomas, J., Steadman, K. J., & Tesfaye, W. H. (2021). When fear and misinformation go viral: Pharmacists' role in deterring medication misinformation during the 'infodemic' surrounding COVID-19. *Research in Social and Administrative Pharmacy, 17*(1), 1954-1963.

Marani, M., Katul, G. G., Pan, W. K., & Parolari, A. J. (2021). Intensity and frequency of extreme novel epidemics. *Proceedings of the National Academy of Sciences, 118*(35).



## BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.  
Follow this format for each person. DO NOT EXCEED FIVE PAGES.

NAME: Kilgore, Paul Evan

eRA COMMONS USER NAME (credential, e.g., agency login): IVI\_PAUL

POSITION TITLE: Associate Professor

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	END DATE MM/YYYY	FIELD OF STUDY
University of Michigan, Ann Arbor, MI	BS	05/1985	Psychobiology
University of Michigan, Ann Arbor, MI	MPH	05/1987	Epidemiology
Wayne State University, Detroit, MI	MD	06/1991	Medicine
University of Michigan Medical School and UM Hospitals, Ann Arbor, MI	OTH	06/1994	Internal Medicine (Hospital- and Clinic-based Residency)
U.S. Centers for Disease Control and Prevention, Atlanta, Georgia	OTH	06/1996	Epidemic Intelligence Service (Applied Field Epidemiology)

### A. Personal Statement

My studies in infectious disease and vaccine-preventable disease research began in 1987 and since that time, I have had the honor of working with a diverse array of excellent scientists. Since that time, I have implemented applied health projects with a focus on vulnerable populations in the United States and overseas. My work has been funded by the US NIH, US CDC, NSF, WHO, Gates Foundation, United Way, Michigan Department of Health and Human Services and more. I have conducted socio-behavioral community-based studies, clinical trials, clinical epidemiologic surveillance studies as well as studies that have focused on reducing clinical and community barriers to pediatric, adolescent and adult vaccinations in the United States and low/middle income countries. I am highly familiar with the US CDC programs having worked at an EIS and Commissioned Corps Medical Officer in the National Center for Infectious Diseases. Since the onset of the COVID-19 pandemic, I have been deeply involved in community epidemiologic studies that include skilled nursing facility (SNF) outbreak investigations and implementation of control measures. My work also includes close work with the Detroit Health Department in conjunction with Henry Ford Health System to support standing up of new COVID-19 vaccination clinics as well as outreach to skilled nursing facilities (SNF) and homeless shelters to support COVID-19 vaccination efforts across diverse communities. Over the past 18 months, I have conducted a large number of virtual educational programs for medical societies, long-term care facilities as well as community groups to address questions related to COVID-19 vaccine hesitancy. In 2020, I helped lead development of COVID-19 diagnostic testing development at the Detroit Health Department. As the pandemic spread to SNFs, this work rapidly expanded to creation, training and deployment of SNF investigation teams coupled with deployment of PPE, diagnostic testing and vaccine education for SNF leadership and staff. This direct engagement and partnership with the Detroit Health Department teams as well as direct collaboration and working alongside SNF staff have enabled me to prepare a strong foundation on which to launch the work proposed in this application. We are honored and privileged to continue working in Detroit addressing wide health disparities with SNF staff as well as the leadership of the Detroit Health Department, Henry Ford Health System, the Detroit Medical Center and the University of Michigan. We are delighted to provide this application that brings a nationally-recognized and expert team in IPC, HAI and work in SNFs assembled to execute the proposed work. Our goal is to ensure that SNF residents and staff have superb technical expertise to move forward through the COVID-19 pandemic and achieve excellence in Infection Control and Prevention for years to come.

1. Sadoff J, Gray G, Vandebosch A, Cárdenas V, Shukarev G, Grinsztejn B, Goepfert PA, Truysers C, Fennema H, Spiessens B, Offergeld K, Scheper G, Taylor KL, Robb ML, Treanor J, Barouch DH, Stoddard J, Ryser MF, Marovich MA, Neuzil KM, Corey L, Cauwenberghs N, Tanner T, Hardt K, Ruiz-

Guiñazú J, Le Gars M, Schuitemaker H, Van Hoof J, Struyf F, Douoguih M. Safety and Efficacy of Single-Dose Ad26.COVS Vaccine against Covid-19. *N Engl J Med*. 2021 Jun 10;384(23):2187-2201. PubMed Central PMCID: PMC8220996.

- Lucien MAB, Canarie MF, Kilgore PE, Jean-Denis G, Fénélon N, Pierre M, Cerpa M, Joseph GA, Maki G, Zervos MJ, Dely P, Boncy J, Sati H, Rio AD, Ramon-Pardo P. Antibiotics and antimicrobial resistance in the COVID-19 era: Perspective from resource-limited settings. *Int J Infect Dis*. 2021 Mar;104:250-254. PubMed Central PMCID: PMC7796801.
- Lee J, Yoon Y, Kim EJ, Lee D, Baek Y, Takano C, Chang B, Iijima T, Kilgore PE, Hayakawa S, Hoshino T, Kim DW, Seki M. 23-valent polysaccharide vaccine (PPSV23)-targeted serotype-specific identification of *Streptococcus pneumoniae* using the loop-mediated isothermal amplification (LAMP) method. *PLoS One*. 2021;16(2):e0246699. PubMed Central PMCID: PMC7886117.
- Baden LR, El Sahly HM, Essink B, Kotloff K, Frey S, Novak R, Diemert D, Spector SA, Rouphael N, Creech CB, McGettigan J, Khetan S, Segall N, Solis J, Brosz A, Fierro C, Schwartz H, Neuzil K, Corey L, Gilbert P, Janes H, Follmann D, Marovich M, Mascola J, Polakowski L, Ledgerwood J, Graham BS, Bennett H, Pajon R, Knightly C, Leav B, Deng W, Zhou H, Han S, Ivarsson M, Miller J, Zaks T. Efficacy and Safety of the mRNA-1273 SARS-CoV-2 Vaccine. *N Engl J Med*. 2021 Feb 4;384(5):403-416. PubMed Central PMCID: PMC7787219.

## **B. Positions and Honors**

### **Positions and Employment**

2015 -	Consultant, Henry Ford Health System, Department of Infectious Diseases, Detroit, MI
2011 -	Associate Professor, Wayne State University, Eugene Applebaum College of Pharmacy and Health Sciences, Detroit, MI
2005 - 2011	Senior Scientist, International Vaccine Institute, Translational Research Division, Seoul
1999 - 2005	Research Scientist, International Vaccine Institute, Translational Research Division, Seoul
1996 - 1999	Medical Officer/Medical Epidemiologist/US PHS Officer, United States Centers for Disease Control and Prevention, National Immunization Program, Epidemiology and Surveillance Division, Child Vaccine Preventable Diseases Branch, Atlanta, GA
1994 - 1996	Epidemic Intelligence Service Officer, United States Centers for Disease Control and Prevention, Division of Viral and Rickettsial Diseases, Respiratory and Enteric Viruses Branch, Viral Gastroenteritis Unit, Atlanta, GA
1991 - 1994	Internal Medicine Resident, University of Michigan Medical Center, Department of Internal Medicine, Ann Arbor, MI

### **Other Experience and Professional Memberships**

1994 -	Member, American College of Physicians
1995 -	Member, Society for General Internal Medicine
1995 -	Member, Infectious Disease Society of America
1996 -	Member, Society of Epidemiologic Research
1998 -	Member, American Society of Microbiology
2009 -	Member, International Society for Vaccines
2011 -	Member, American Telemedicine Association

### **Honors**

2018	Fellow, American College of Physicians, American College of Physicians
2017	Excellence in Research Award, Eugene Applebaum College of Pharmacy and Health Sciences, Wayne State University
2014	US NIH, Study Section Member, Clinical Trial Planning and Implementation Grants, Special Emphasis Panel, ZAI1 BLG-M M1, US National Institutes of Health Center for Scientific Review
2013	US NIH, Study Section Member, Vaccine Trial and Evaluation Units, ZAI1-BLG-M-C1 Special Emphasis Panel, US National Institutes of Health, Center for Scientific Review
2009	Long-Term Service Award 2009, International Vaccine Institute, Seoul, South Korea

- 2009 US NIH, Study Section Member, NIAID Clinical Trials BLG M-J1, US National Institutes of Health
- 1999 The Achievement Medal, Department of Health and Human Services, US Public Health Service
- 1997 The Outstanding Unit Citation, Department of Health and Human Services, US Public Health Service

### C. Contribution to Science

1. My first major contribution has been in the field of national diarrheal diseases in the US and globally. Because of this work, I have been sought after as an NIH reviewer as well as journal editor and reviewer. I have also served on several international grant review committees for national funding agencies and foundations. This expertise has been based on my early career work and experience at the US CDC in Atlanta and the International Vaccine Institute. Several publications have resulted in this work (among the over 80 peer reviewed publications that I have written with colleagues.
  - a. Török TJ, Kilgore PE, Clarke MJ, Holman RC, Bresee JS, Glass RI. Visualizing geographic and temporal trends in rotavirus activity in the United States, 1991 to 1996. National Respiratory and Enteric Virus Surveillance System Collaborating Laboratories. *Pediatr Infect Dis J.* 1997 Oct;16(10):941-6. PubMed PMID: 9380468.
  - b. Glass RI, Kilgore PE, Holman RC, Jin S, Smith JC, Woods PA, Clarke MJ, Ho MS, Gentsch JR. The epidemiology of rotavirus diarrhea in the United States: surveillance and estimates of disease burden. *J Infect Dis.* 1996 Sep;174 Suppl 1:S5-11. PubMed PMID: 8752284.
  - c. Kilgore PE, Belay ED, Hamlin DM, Noel JS, Humphrey CD, Gary HE Jr, Ando T, Monroe SS, Kludt PE, Rosenthal DS, Freeman J, Glass RI. A university outbreak of gastroenteritis due to a small round-structured virus. Application of molecular diagnostics to identify the etiologic agent and patterns of transmission. *J Infect Dis.* 1996 Apr;173(4):787-93. PubMed PMID: 8603955.
  - d. Kilgore PE, Holman RC, Clarke MJ, Glass RI. Trends of diarrheal disease--associated mortality in US children, 1968 through 1991. *JAMA.* 1995 Oct 11;274(14):1143-8. PubMed PMID: 7563485.
2. My second notable contribution has been to understand the impact as well as improve awareness of infectious diseases and to describe their characteristics and strategies for public health control of vaccine preventable diseases including infectious diseases of importance within the United States and in a range of countries across the world.
  - a. Zahran S, McElmurry SP, Kilgore PE, Mushinski D, Press J, Love NG, Sadler RC, Swanson MS. Assessment of the Legionnaires' disease outbreak in Flint, Michigan. *Proc Natl Acad Sci U S A.* 2018 Feb 20;115(8):E1730-E1739. PubMed Central PMCID: PMC5828617.
  - b. Byrne BG, McColm S, McElmurry SP, Kilgore PE, Sobeck J, Sadler R, Love NG, Swanson MS. Prevalence of Infection-Competent Serogroup 6 *Legionella pneumophila* within Premise Plumbing in Southeast Michigan. *mBio.* 2018 Feb 6;9(1) PubMed Central PMCID: PMC5801461.
  - c. Kilgore PE, Salim AM, Zervos MJ, Schmitt HJ. Pertussis: Microbiology, Disease, Treatment, and Prevention. *Clin Microbiol Rev.* 2016 Jul;29(3):449-86. PubMed Central PMCID: PMC4861987.
  - d. Martínez MJ, Salim AM, Hurtado JC, Kilgore PE. Ebola Virus Infection: Overview and Update on Prevention and Treatment. *Infect Dis Ther.* 2015 Dec;4(4):365-90. PubMed Central PMCID: PMC4675769.
3. My third notable area of expertise is in conducting studies to describe the burden of vaccine-preventable diseases of importance within the US and other countries. These studies also include collaborative and team science based studies to implement standardized protocols for the evaluation of vaccine-preventable diseases across a wide range of clinical and country settings including the United States.
  - a. Knoll MD, Moïsi JC, Muhib FB, Wonodi CB, Lee EH, Grant L, Gilani Z, Anude CJ, O'Brien KL, Cherian T, Levine OS. Standardizing surveillance of pneumococcal disease. *Clin Infect Dis.* 2009 Mar 1;48 Suppl 2:S37-48. PubMed PMID: 19191618.

- b. Kilgore PE, Nyambat B. Introducing new vaccines in developing countries: concepts and approaches to estimating burden of *Haemophilus influenzae* type b-associated disease. *J Health Popul Nutr.* 2004 Sep;22(3):246-56. PubMed PMID: 15609777.
  - c. Kilgore PE, Kruszon-Moran D, Seward JF, Jumaan A, Van Loon FP, Forghani B, McQuillan GM, Wharton M, Fehrs LJ, Cossen CK, Hadler SC. Varicella in Americans from NHANES III: implications for control through routine immunization. *J Med Virol.* 2003;70 Suppl 1:S111-8. PubMed PMID: 12627498.
  - d. Glass RI, Kilgore PE, Holman RC, Jin S, Smith JC, Woods PA, Clarke MJ, Ho MS, Gentsch JR. The epidemiology of rotavirus diarrhea in the United States: surveillance and estimates of disease burden. *J Infect Dis.* 1996 Sep;174 Suppl 1:S5-11. PubMed PMID: 8752284.
4. This area of contribution has focused on the development, testing and evaluation of novel diagnostic tests for invasive bacterial pathogens. New diagnostic assays are critically important globally in the fight to reduce injudicious use of antimicrobial agents. Our studies of diagnostic tests have focused on the loop-mediated isothermal amplification (LAMP) assay platform. In our studies, we have demonstrated that these tests perform extremely well and have improved sensitivity and specificity compared with existing PCR-based assays.
- a. Seki M, Kilgore PE, Kim EJ, Ohnishi M, Hayakawa S, Kim DW. Loop-Mediated Isothermal Amplification Methods for Diagnosis of Bacterial Meningitis. *Front Pediatr.* 2018;6:57. PubMed Central PMCID: PMC5857938.
  - b. Takano C, Seki M, Kim DW, Kilgore PE, Fuwa K, Takahashi K, Inazaki T, Hayakawa S. Molecular Serotype-Specific Identification of Non-type b *Haemophilus influenzae* by Loop-Mediated Isothermal Amplification. *Front Microbiol.* 2017;8:1877. PubMed Central PMCID: PMC5632651.
  - c. Lee D, Kim EJ, Kilgore PE, Takahashi H, Ohnishi M, Tomono J, Miyamoto S, Omagari D, Kim DW, Seki M. A Novel Loop-Mediated Isothermal Amplification Assay for Serogroup Identification of *Neisseria meningitidis* in Cerebrospinal Fluid. *Front Microbiol.* 2015;6:1548. PubMed Central PMCID: PMC4709847.
  - d. Lee D, Kim EJ, Kilgore PE, Kim SA, Takahashi H, Ohnishi M, Anh DD, Dong BQ, Kim JS, Tomono J, Miyamoto S, Notomi T, Kim DW, Seki M. Clinical evaluation of a loop-mediated isothermal amplification (LAMP) assay for rapid detection of *Neisseria meningitidis* in cerebrospinal fluid. *PLoS One.* 2015;10(4):e0122922. PubMed Central PMCID: PMC4390149.

Complete List of Published Work in My Bibliography:

<https://www.ncbi.nlm.nih.gov/myncbi/paul.kilgore.1/bibliography/public/>

## **D. Scholastic Performance**

### **Completed Research Support**

0000, University of Michigan Third Century Initiative

Professor Henry Wang (PI)

05/01/13-12/30/14

Development of a Scalable Platform for Precision Disease Diagnosis Linked to Guided Medication Therapy

This project provided \$15,000 to support creation of a research team and assessment of feasibility to create point of use diagnostics for high priority antibiotic resistant bacterial pathogens such as *Clostridium difficile*.

Role: CPI

42752, Medical & Educational Research Grants, Pfizer

Marcus Zervos, MD (PI)

01/01/12-10/30/14

Pneumococcal Disease Prevention Initiative: Integrated Interventions for Improved Adult Immunization Rates

This project provided \$749,000 and was undertaken with a highly multi-disciplinary research team in order to improve rates of adult bacterial and viral vaccines across a diverse network of ambulatory care provider sites in the Henry Ford Health System.

Role: CPI

OPP1069052, Bill and Melinda Gates Foundation, Grand Challenges Explorations Program

Kilgore, Paul Evan (PI)

12/01/12-06/30/14

Mobile Immunization Tracking and Information System

This project provided a \$100,000 award to develop an innovative system for identification of individual vaccinees and create retrievable records in a cloud-based data repository.

Role: PI

0000, Association of Health System Pharmacists

Susan Leroque Davis, PharmD (PI)

01/01/12-12/30/13

Antimicrobial stewardship provided through novel approaches to optimize pharmacists workflow (Stewardship-NOW)

This quasi experimental study provided \$25,000 to conduct an evaluation of the impact of an antimicrobial stewardship program in a large hospital in collaboration with pharmacists who were not specialized in infectious diseases.

Role: Co-Investigator

0000, EcoLab

Keith Kaye, MD, MPH (PI)

10/01/12-09/30/13

The Use of OxyCide Daily Disinfectant Cleaner to Reduce Environmental Contaminatin in Rooms of Carriers of Multidrug Resistant Pathogens

Clinical evaluation to measure effectiveness of a novel room treatment method (Oxycide) on the rate of drug resistant bacterial pathogen isolation in hospital rooms.

Role: Co-Investigator

R03 HD052216-02, Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)

Kilgore, Paul Evan (PI)

08/01/06-07/31/10

Pilot Study of Automated Surveillance to Measure Burden

Role: PI

R03 HD052216-01, Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)

Kilgore, Paul Evan (PI)

08/01/06-07/31/08

Pilot Study of Automated Surveillance to Measure Burden

Role: PI

8101481389, Merck Global Outcomes Research

Kilgore, Paul Evan (PI)

07/01/15-08/30/17

Vaccine Uptake Among Adults: Interventions and Evaluation in a Large Health System

Role: PI



**BIOGRAPHICAL SKETCH**

Provide the following information for the Senior/key personnel and other significant contributors.  
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

**NAME:** Trini A. Mathew, MD, MPH, FACP, FIDSA

eRA COMMONS USER NAME (credential, e.g., agency login):

**POSITION TITLE:**

Associate Professor Department of Medicine, Oakland University William Beaumont School of Medicine and Wayne State University, ID consultant, Beaumont Hospital, Royal Oak, CEO, HealthTAMCycle<sup>3</sup> PLLC

**EDUCATION/TRAINING**

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Gargi College, Delhi University, Delhi, India	Completed first year	1990	B.SC Microbiology (Honors)
Tver State Medical Academy, Tver, Russia	M.D.	06/1997	Medicine
Jacobi Medical Center, Bronx, NY	Residency/Chief Residency	07/1999-06/2003	Internal Medicine
Hazeldon, New York, NY	Physician in residence	2000	Chemical Dependency
Halzeldon, New York, NY	Faculty training	2001	Program on Addiction for Primary Care Physicians
Beth Israel Deaconess Medical Center, Boston, MA	Fellow	07/2003-06/2006	Infectious Diseases
Brigham and Women's Hospital, Boston, MA	Research Fellow	07/2004-06/2006	Division of Social Medicine and Health Inequalities
Harvard School Of Public Health, Boston, MA	M.P.H.	11/2006	Concentration in Clinical Effectiveness

**A. Personal Statement**

I completed my medical degree with honors from Tver, Russia, and residency and chief residency in Internal Medicine, from Jacobi Medical Center, Bronx, New York. I subsequently pursued my Infectious Diseases fellowship at Beth Israel Deaconess Medical Center, affiliated with Harvard Medical School, Boston, and also completed my Masters in Public Health (MPH) through Harvard School of Public Health. During my MPH, I was introduced to Quality Improvement (QI), by taking a class on QI taught by Institute for Healthcare Improvement. I learned early on, that the process of Plan -Do- Study- Act (PDSA), is pivotal in bringing about change. Subsequently, during my ID fellowship, I worked with Partners in Health (PIH) in the field of TB, HIV and alcohol use disorders internationally, in Tomsk, Siberia, Russia. I trained the Tomsk TB physicians in the use and integration of AUDIT, provided oversight of data collection, participated in analysis, developed a TB-alcohol working group, and completed the manuscripts as evidenced by the listed publications. In addition, I worked with my colleagues to also design and develop the NIH funded IMPACT study, a 2x 2 factorial design, evaluating interventions for AUD in TB care in Tomsk. I helped identify the Russian 5 “C”s, analogous to the motivational interviewing construct of 5 “A”s. I also provided training on addressing AUD in both HIV and TB

patients in Russia. I subsequently went on to work on TB in Mississippi, and continued to contribute to the field of TB nationally and internationally as speaker and session coordinator of conferences.

In early 2010, having gained experiences, while working in public health and epidemiology, I transitioned into the field of Hospital Epidemiology. This was also the beginning of a new era for the field of Hospital Epidemiology, Infection Prevention and control, as Healthcare Associated Infections (HAIs) were to be publicly reported, through the national database and through CMS. As a Hospital Epidemiologist, I have served as Chair on Infection Control Committees, and also of Antibiotic Stewardship program. I have also served as a member of Advisory Committee for Elimination of TB, Connecticut Department of Public Health and more recently, participated in Work group on TB screening in Health Care Workers, as part of National TB Controller's Association. My initial question on the utility of annual TB skin testing/screening of healthcare workers that arose in 2013 during the shortage of PPD led to further collaborations and a change in US guidelines, with the publication in 2019.

I volunteered with Infectious Diseases Society of America (IDSA) for 6 years on the IDSA Public Health committee, and also represented IDSA at Capitol Hill briefings on Immunizations. In 2019, I was nominated for and accepted to the inaugural class of the IDSA Leadership Institute and in 2020, I was appointed member of the IDSA Inclusion, Diversity, Access and Equity Task Force. I am also a member of the Society for Healthcare Epidemiology of America (SHEA) and I volunteer on the SHEA Community Based Healthcare Epi Task Force. In 2019, I was invited to serve on the SHEA Public Policy and Government Affairs (PPGA) Committee and in 2020 I served as Vice Chair of PPGA, and currently I am the Chair of PPGA (two year term). Additionally, I volunteer with the American College of Physicians (ACP), and was an invited speaker for the ACP- India Chapter National Conference in 2019.

Since 2016, I have been appointed as an adjunct visiting faculty in Department of Microbiology, Kasturba Medical College (KMC), Manipal, Karnataka, India. I collaborated with colleagues at Manipal University in India on training and education in sepsis management, antimicrobial stewardship and infection control. I provided live webinar lecture for Manipal University medical students via Skype in March 2017. I also visited and provided a day and half of case-based discussions, meeting with physicians, trainees, and Infection Control staff in 2019. Subsequently, we have collaborated on COVID-19 response, education on IPC and vaccines and resilience building. I have also presented to physicians in the Indian subcontinent via webinar on diagnosis and management of COVID-19, as requested by the ACP- India chapter in 2020, as well as about COVID19 vaccines in 2021. I have also provided webinars in 2020 to EMS and in 2021 to members of the Society of Nuclear Medicine and Molecular imaging technologist program, as well as through Project ECHO- Sudan, COVID-19 infection prevention and control (IPC) for medical students and physicians in Sudan.

In summary, I have worked in both academic and community hospital settings as healthcare epidemiologist. I have provided education, grand rounds on IPC, AMR for physicians, residents, and fellows, nurses and ancillary staff, locally and nationally in US as well as internationally.

**B. Positions and Honors**

2002-2003	Hospitalist, Jacobi Medical Center, Bronx, NY
2003-2006	Clinical Fellow in Medicine, Infectious Diseases, Beth Israel Deaconess Medical Center, Boston, MA
2004-2006	Research Fellow in Division of Social Medicine Health Inequalities, Brigham and Women's Hospital, Boston, MA
2006-2007	Faculty, Division of Social Medicine and Health Inequalities, Brigham and Women's Hospital, Boston, MA
2006-2007	Instructor of Medicine, Harvard Medical School, Boston, MA
2007-2009	Assistant Professor of Medicine, Univ. of Mississippi Medical Center, Jackson, MS
2007-2009	Infectious Diseases Consultant to MS Department of Health, TB program
2007-2009	Infectious Disease Consultant, Methodist Rehabilitation Center, Jackson, MS
2007-2009	Faculty Member, Delta Region AIDS Education Training Center
2008-2009	Infectious Disease Consultant, Methodist Rehabilitation Center, Jackson, MS
2010-2015	Assistant Professor of Medicine, University of Connecticut Health Center, Farmington, CT

2010-2015	Hospital Epidemiologist, University of Connecticut Health Center, Farmington, CT
2015-2017	Medical Director, Epidemiology & Infection Control, Conemaugh Memorial Medical Center, Johnstown, PA
2015-2017	Medical Staff, Conemaugh Memorial Medical Center, Johnstown, PA
2015-2017	Member, Pharmacy and Therapeutics Committee, Conemaugh Memorial Medical Center, Johnstown, PA
2017	Chair, Antibiotic Stewardship Committee, Conemaugh Memorial Medical Center, Johnstown, PA
2017- 2021	Medical Director of Epidemiology and Infection Prevention, Beaumont Hospital RO,
2017-	Medical Staff, Beaumont Hospital, Royal Oak, MI
2018-	Associate Professor, Clinician in the Internal Medicine/Infectious Disease Department, Oakland University, William Beaumont School of Medicine, MI
2021-	Associate Professor, Volunteer clinician in Dept of Medicine, Wayne State University, MI

## C. Contributions to Science

### Peer Reviewed

- Schaffzin JK, Murthy, R, Deloney, VM, **Mathew, T**, Pettigrew E, Pettis, AM, Trivedi, K, Weber, D. A Guide to Implementing COVID-19 Vaccine as a Condition of Employment in Healthcare Facilities. *Infection Control and Hospital Epidemiology (ICHE)* 2021 Sep 20; 1-2, doi: 10.1017/ice.2021.405. Online ahead of print
- Raul Macias Gil, Tracey Freeman, **Trini Mathew**, Ravina Kullar, Anais Ovalle, Don Nguyen, Angélica Kottkamp, Jin Poon, Jasmine Marcelin, Talia H. Swartz. The LGBTQ+ communities and the COVID-19 pandemic: a call to break the cycle of structural barriers. *Journal of Infectious Diseases* Vol 224, December 2021.
- Weber, D., Al-Tawfiq, J., Babcock, H., Bryant, K., Dress, M., Elshaboury, R., Essick, K., Fakhri, M., Henderson, D., Javaid, W., Juffras, D., Jump R.L., Lee, F., Malani, A., **Mathew, T.**, Young, H. Multisociety Statement on COVID 19 Vaccination as Condition of Employment for Healthcare Personnel. *Infection Control and Hospital Epidemiology (ICHE)* 2021
- Tan TQ, Kullar R, Swartz TH, **Mathew T**, Piggott D, Berthaud V Location matters: Geographic Disparities and Impact of Coronavirus Disease 2019. *Journal of Infectious Diseases* Vol 222. December 2020 1951-1954
- Gil MR, Marcelin JR, Zuniga-Blanco B, Marquez C, **Mathew T**, Piggott D COVID-19 pandemic: Disparate Health Impact on the Hispanic/Latinx Population in the United States. *Journal of Infectious Diseases* Vol 222, November 2020 1592-1595
- Weber D, Talbot T, Weinmann A, **Mathew T**, Heil E. et al Drees M. Statement from Society of Healthcare Epidemiology of America: Only medical contraindications should be accepted as a reason for not receiving all routine immunizations as recommended by the Centers for Disease Control and Prevention, *Infection Control and Hospital Epidemiology*, 42 (1), 1-5 September 2020
- Kullar R, Marcelin JR, Swartz TH, Piggott DA, **Mathew T**, Tan T. Racial disparity of Coronavirus Disease 2019 in African American. *Journal of Infectious Diseases* Vol 222, September 2020 890-893
- Thanassi W, Behrman AJ et al **Mathew T**, Gruden M, Higashi J, Hudson, TW. Tuberculosis Screening, testing and Treatment of US Health Care Personnel. ACOEM and NTCA Joint Task Force on Implementation of the 2019 MMWR Recommendations. *JOEM* Vol 62, Number 7, July 2020
- Sosa LE et al, Mathew T A, Mazurek GH, Reves R, Paulos L, Thanassi W, Will A, Belknap R. Tuberculosis Screening, Testing and Treatment of US Health Care Personnel: Recommendations from the National Tuberculosis Controllers Association and CDC, 2019. *MMWR: May 17th 2019/ 68 (19); 439-443*
- Furin, J, **Mathew, T** TB Control in Acute Disaster Settings: Case Studies from the 2010 Haiti Earthquake. *Disaster Medicine and Public Health Preparedness. Volume 7 / Issue 02 / April 2013, pp 129-130*

11. Webb, RM, Penman, A, Holcombe, M, Dobbs, T, **Mathew, TA**. TB Case Decline with Nineteen Years of Universal Directly Observed Therapy in a Statewide Comprehensive Program. *International Journal of TB and Lung Diseases*. 2011. Jun;15(6):848-50
12. Shin, SS, **Mathew TA**, Yanova GV, Fitzmaurice GM, Livchits V, Yanov SA, Strelis AK, Mishustin SP, Bokhan NA, Lastimoso CS, Connery HS, Hart JE, Greenfield SF. Alcohol Consumption among Men and Women with Tuberculosis in Tomsk, Russia. *Central European Journal of Public Health*. 2010 Sep; Volume 18, Number 3: 132-8.
13. **Mathew, Trini**. HIV and TB: Dual immunosuppressive diseases. *HIV Clinician*. 2010 Spring;22(2):1,4-5 <http://www.deltaaetc.org/indivarticles.htm>
14. **Mathew T**, Shields A, Yanov S, Golubchikova V, Strelis A, Yanova G, Mishustin S, Fitzmaurice G, Connery H, Shin S, Greenfield S. Performance of the Alcohol Use Disorders Identification Test Among Tuberculosis Patients in Russia. *Substance Use & Misuse*, 2010 Mar; 45 (4):598–612
15. Greenfield SF, Shields A, Connery HS, Livchits V, Yanov SA, Lastimoso C, Strelis AK, Mishustin SP, Fitzmaurice G, **Mathew T**, Shin S. Integrated Management of Physician-delivered Alcohol Care for Tuberculosis Patients (IMPACT): Design and Implementation. *Alcohol Clin Exp Res*. 2010 Feb; 34 (2): 317–330
16. **Mathew TA**, Shields AL, Imasheva A, Shin SS, Mishustin SP, Peremitin GG, Strelis AK, Yanova GV, Greenfield SF, Furin JJ. (2009) Knowledge, attitudes and practices of physicians in Tomsk Oblast Tuberculosis services regarding alcohol use among tuberculosis patients in Tomsk, Russia. *Culture Med & Psychiatry* 2009.Dec;33(4):523-37 Published on line September 19<sup>th</sup>, 2009 DOI 10.1007/s11013-009-9148-0
17. **Trini A. Mathew**; Sergey A. Yanov; Rais Mazitov; Sergey P. Mishustin; Aivar K. Strelis; Galina V. Yanova; Vera T. Golubchikova; Dmitry V. Taran; Alex Golubkov; Alan L. Shields; Shelly F. Greenfield; Sonya S. Shin; on behalf of the Tomsk Tuberculosis Alcohol Working Group. Integration of alcohol use disorders identification and management in the tuberculosis programme in Tomsk Oblast, Russia. *Eur J Public Health*. 2009 Jan;19(1):16-18. Epub 2008 Dec 26.
18. **TA Mathew**. Current state of Tuberculosis (TB) in Mississippi- What can we learn from the past? *Mississippi Morbidity Report*, February 2008; Vol 24: 2
19. **Mathew TA**, Ovsyanikova TN, Shin SS, Gelmanova I, Balbuena DA, Atwood S, Peremitin GG, Strelis AK, Murray MB. Causes of death during tuberculosis treatment in Tomsk Oblast, Russia. *Int J Tuberc Lung Dis*. 2006; 10(8):857-63.

## **Abstracts**

1. Akram, H, Johnson P, **Mathew, T**. Human Papilloma Virus (HPV) vaccination uptake in HIV patients: challenges during COVID19 pandemic in Michigan, USA, International AIDS Society 2021, 11th IAS Conference on HIV Science, July 2021. Abstract e-poster accepted.
2. Mauli Patel MSc, Robin Sudandiradas, **Trini Ann Mathew MD, MPH**, Marcus Zervos MD, Paul Kilgore MD MPH, Mahadev Rao MD, Chiranjay Mukhopadhyay MD, Muralidhar Varma MD, Vijaya Arun Kumar MD MPH Current Challenges in COVID-19 Triaging: A Global Perspective, SAEM 2021, Abstract Poster April 2021
3. Brickner E, Johnson P, **Mathew T**. Implementation and Evaluation of Alcohol Screening Tool in HIV Patients. IDWeek 2020 Abstract Poster 10/2020
4. **Mathew T**, Hopkins J, Kameron D, Ali S, Ortiz D, Johnson P, Chittick P, Carpenter C. Molecular SARS-CoV-2 Testing During the COVID-19 Outbreak: Experiences of a Hospital in Southeast Michigan, USA. ID Week 2020 Abstract and Poster Virtual Conference 2020
5. **Mathew T**, Johnson P, Kameron D, Jones A, Ditkoff J, Ziadeh, J, Carpenter C. Strong Partnership and Effective Communication between Tertiary Hospital and a County Health Department were Critical in Controlling a 2019 Measles Outbreak in Southwest Michigan (SEM) Poster presented at ID Week 2019, Washington D.C. 2019

6. Slete K, Kandia S, Johnson P et al, **Mathew T**. Every visit counts: Roll out of a vaccination Program in Resident Clinic during a Hepatitis A Virus Outbreak in Michigan- A Quality Improvement Study. ACP National Meeting, Philadelphia, PA, 2019
7. Lana Mason, BSN, CIC, Helene Petrovich, BS, RN, CCP, LP, Lisa Hoegg, RN, BSN, CIC Paula Crook, RN BSN, CIC, Tracy Dodson, RN, BSN, Jean Rearick, RN, BSN, MPH, CIC, CPHQ, CPPS, Katie Vivian, RN, BSN, CIC, Paula Crook, RN BSN, CIC, **Trini Mathew, MD, MPH, FACP, FIDSA**. Lessons from the Field: Surveillance Cultures of Heater Cooler Units in Cardiothoracic Surgery. Poster to be present at Association for Professionals in Infection Control and Epidemiology 2016- 43rd Annual Conference, Charlotte, North Carolina.
8. Lana Mason, BSN, CIC, Paula Crook, RN BSN, CIC, Kate Freedman, MT (ASCP)SM, Lary Koval, MT (ASCP) SM, MBA, Katie Vivian, RN, BSN, CIC, Lisa Hoegg, RN, BSN, CIC, Jean Rearick, RN, BSN, MPH, CIC, CPHQ, CPPS, **Trini Mathew, MD, MPH, FACP, FIDSA**. Lessons from the field: Challenges and solutions to Active Surveillance Culturing of Duodenoscopes in Endoscopic Retrograde Cholangiopancreatography (ERCP). Poster to be present at Association for Professionals in Infection Control and Epidemiology 2016- 43rd Annual Conference, Charlotte, North Carolina.
9. Yihew Negatu MD, MPH, Matthew Exline MD, MPH, Sarah Tayprik MD, **Trini Mathew, MD, MPH**, Shu-Hua Wang, MD, MPH&TM. Factors Associated with Tuberculosis Infectiousness and Excess Alcohol Use in Franklin County, Ohio. American Thoracic Society International Conference 2016. Poster# 168 May 2016, San Francisco, CA
10. Tilahun Amdissa Gemtessa, MD; **Trini Ann Mathew, MD, MPH, FACP**; Jeffrey R. Aeschlimann, Pharm.D. The Relationship between Vancomycin Minimum Inhibitory Concentrations (MICs) and Treatment Failure among Patients with Methicillin-Resistant Staphylococcus aureus Blood Stream Infections (MRSA-BSI) at the University of Connecticut Health Center (UCHC). ID WEEK 2014. Session #48, Poster #469. October 2014, Philadelphia, PA
11. Prerna Mota, Michel Bidros, Hana Javaid, Sara N. Dost, Anat Bergner, Lisa M. Chirch, **Trini A. Mathew**, Jeffrey S. Wasser Hemophagocytic lymphohistiocytosis- A Zebra in the pack; Society of General Internal Medicine, 36th Annual Meeting, Denver, Colorado- Clinical Vignette Poster Session. Society of General Internal Medicine, 36th Annual Meeting, Denver, Colorado- Clinical Vignette Poster Session. 04/2013
12. **T. Mathew**. Speakers Abstract Enhancing collaborative partnerships for care of TB- HIV and alcohol comorbidities. 43rd Union World Conference on Lung Health of the International Union Against Tuberculosis and Lung Diseases, November, 2012, Kuala Lumpur, Malaysia.
6. S-H Wang, B. Butler, B. DeJesus, **T. Mathew**. Poster- abstract-Excessive alcohol use and impact on tuberculosis treatment outcomes in a tuberculosis control program. 43rd Union World Conference on Lung Health of the International Union Against Tuberculosis and Lung Diseases, November, 2012, Kuala Lumpur, Malaysia. PC-326-15.
13. **T. Mathew**. Speakers Abstract Effective and sustainable partnerships for TB- HIV care of people with comorbid alcohol and substance use. 42nd Union World Conference on Lung Health of the International union Against Tuberculosis and Lung Diseases, October 2011, Lille, France.
14. **T Mathew**, G Raghuraman. Speakers Abstract. Screening for alcohol use disorders among TB and HIV patients. 41st Union World Conference on Lung Health of the International Union Against Tuberculosis and Lung Diseases, November 2010, Berlin, Germany.
15. **T A Mathew**. Speakers abstract. Social networking associated with alcohol and substance uses: its impact on TB -HIV care. 40th World Conference on Lung Health of the International Union Against Tuberculosis and Lung Disease, December 2009, Cancun, Mexico.
16. **T Mathew** et al. Guidelines to practice: implementing IGRA in routine HIV care in Mississippi, USA. 40th World Conference on Lung Health of the International Union Against Tuberculosis and Lung Disease, December 2009, Cancun, Mexico.
17. **T Mathew** et al. Contact Investigations- a critical tool in early tuberculosis case identifications in Mississippi. 40th World Conference on Lung Health of the International Union Against Tuberculosis and Lung Disease, December 2009, Cancun, Mexico.
18. **T Mathew**, G Bishop, J Westberry, S Quilter, S Chapman, R Webb, J Sennett, M Holcombe. Implementation of an electronic medical records (EMR) system for TB management and control in

Mississippi, USA. 39th World Conference on Lung Health of the International Union Against Tuberculosis and Lung Disease, October 2008, Paris, France. PS-82316-20 Page S 327

19. **T A Mathew**. Speakers abstract. What to do when alcohol use among TB-HIV patients is considered a habit and not disease, 38th World Conference on Lung Health of the International Union Against Tuberculosis and Lung Disease, November 2007, Cape Town, South Africa. Page S23
20. S A Yanov, A K Strelis, G V Yanova, R R Mazitov, D V Taran, S S Shin, V V Provotorov, **T A Mathew**. Organising an alcohol use disorders treatment programme for TB patients in Tomsk Oblast TB clinical Hospital. 38th World Conference on Lung Health of the International Union Against Tuberculosis and Lung Disease, November 2007, Cape Town, SA. PS 71631-10 Page S101
21. E Nardell, **T A Mathew**, A Golubkov, G G Peremitin, E N Pronina, R Mazitov, M L Rich, I Gelmanova, SS Shin, J Mukherjee, J J Furin, S Keshavjee. Theoretical Outcomes of Four Screening and Treatment Strategies for Latent TB Infection among HIV-Infected Persons in Russia. 38th World Conference on Lung Health of the International Union Against Tuberculosis and Lung Disease, November 2007, Cape Town, South Africa. PC-71885-10. Page S60.
22. **Mathew T A**, Grinchenko SY, Yanov SA, et al. Integrating the Alcohol Use Disorders Identification Test (AUDIT) into Routine Care of Tuberculosis Patients in Tomsk, Russia. The 37th IUATLD World Conference and **CDC Late- Breaker Session** on Tuberculosis, November 2006, Paris, France. 2006; (Abstract #24) **Oral presentation**.
23. Nardell E, **Mathew TA**, Golubkov A, Peremitin GG, Pronina EN, Mazitov R, Rich M, Keshavjee S, Gelmanova I, Shin SS, Mukherjee J, Furin JJ. Theoretical Outcomes of Three Alternative Screening and Treatment Strategies for Latent TB Infection among HIV-Infected Persons in a Region with High Drug Resistance. XVI International AIDS Conference, August 2006, Toronto, Canada. 2006.
24. **Mathew TA**, Ovsyanikova TN, Shin SS, Peremetin GG, Strelis AK, Murray MB. Causes of Mortality during Tuberculosis treatment in Tomsk, Russia. 43rd Annual Meeting of the Infectious Diseases Society of America (IDSA), San Francisco, CA. 2005.
25. **Mathew TA**, Ovsyanikova TN, Shin SS, Peremetin GG, Strelis AK, Murray MB. Causes of Mortality during Tuberculosis treatment in Tomsk, Russia. 5th Annual Harvard Medical School Center for AIDS Research (CFAR) Symposium and Poster Seminar, "Confronting TB-HIV Co-infection," Boston, MA. 2005.

## D. Additional Information: Research Support and/or Scholastic Performance

### Research Funding Information

2005-2006	Co-P.I., Whitman Memorial Foundation, Harvard Medical School, <u>Role of alcohol use in TB treatment outcomes in Tomsk, Russia</u>
2005	Co-P.I., IREX, <u>Role of alcohol use disorders in tuberculosis treatment outcomes in Tomsk, Russia</u>
2006-2007	Co-investigator, NIH/ NIAAA, R01 AA016318 (PI: Shin) <u>Assessment of Alcohol Use Disorders on TB Outcomes in Tomsk, Russia</u>
2008-2009	MS Site Co- P.I. Centers for Disease Control and Prevention, Tuberculosis Epidemiology Studies Consortium- Task Order # 25. <u>TB Mortality in the US: Epidemiology and Prevention Opportunities.</u>
2009	Principal Investigator, The Mississippi Institute for Improvement of Geographic Minority Health Competitive Grants Award. <u>Factors associated with positive Interferon Gamma Release Assays in HIV clinic Patients in UMMS, MS</u>
2011-2013	Principal Investigator, White Coat GALA Pilot Funds. University of Connecticut <u>Health Center. Alcohol, substance use and Highly Active Retroviral Treatment (HAART) adherence and HIV progression in CT, US</u>
2014-2015	Research Personnel (5%FTE) 1U01AA021990-01 (Multiple PI: Stephen L. Schensul PhD, Niranjani Saggurti, PhD, Jean J. Schensul PhD) <u>Alcohol and Antiretroviral Treatment Adherence: Assessment, Intervention and Modeling in India</u>
2018-2021	AHRQ Grant#1R01HS024951-01: <u>Screening to Prophylax against C. difficile Infection (StoP CDI);</u>

## B. Report of Other (Non-Funded) Activities

- 2005-2007 Co-P.I., Qualitative Pilot of TB physicians in Tomsk, Russia on their knowledge, attitudes and practices for diagnosing and treating patients with alcohol disorders concomitantly during the course of tuberculosis treatment.
- 2006-2007 Co-P.I., Naltrexone pilot study, Tomsk, Russia
- 2014-2015 Co- Investigator, Relationship between Vancomycin MICs and Treatment Failure among Patients with Methicillin Resistant Staphylococcus aureus Blood Stream Infections (MRSA-BSI) at University of Connecticut Health Center. (ID fellow's project: Tilahun A Gemtessa, MD, EMMB; PI: Jeffrey R. Aeschlimann, Pharm.D)
- 2018-2020 P.I. The roll out of Hepatitis A vaccine at Beaumont Health, Royal Oak, Outpatient Resident clinic: quality improvement study; OUWB Med Student and IM resident
- 2018-2021 PI: Evaluation of Cohort of C diff patients in William Beaumont Hospital Royal Oak, MI: project of ID fellow Dr. H. Boamah and trainees
- 2019-2021 P.I. Risk factors affecting central line blood stream infections (CLABSI), Beaumont Hospital Royal Oak, MI, IM residents projects; Dr. B. Lai and Dr. S. Savedchuk
- 2019-2021 P.I. Implementation and Evaluation of Systematic Screening tool- Alcohol Use Disorders Identification Test (AUDIT) in HIV positive clinic patients, Beaumont Hospital, Royal Oak, MI; OUWB Med student Class of 2021 EMBARK project E. Brickner
- 2019- P.I. Quality Improvement Study on HPV vaccination uptake in patients with HIV. OUWB Med student Class of 2022 EMBARK project H. Akram
- 2020- P.I. Cohort Characteristics and predictors of adverse outcomes of COVID19 positive cases from a Health System experience. Multiple Co.I and trainees, Beaumont Hospital, Royal Oak, MI
- 2021- P.I. COVID-19 Vaccination Attitudes and Behaviors in Beaumont Health Employees Beaumont Hospital, Royal Oak, MI
- 2021- Co.I. Impact of vaccination on COVID19 outcomes Beaumont Hospital, Royal Oak, MI
- 2021- Co.I. Psychological effects of COVID19 pandemic among frontline nurses, Kasturba Medical College, Manipal, Karnataka, India

## BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors in the order listed on Form Page 2.  
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME Zervos, Marcus J  eRA COMMONS USER NAME: mzervos1	POSITION TITLE Division Head, Infectious Diseases , Henry Ford Hospital Assistant Dean, Global Affairs, Professor of Medicine, Wayne State University School of Medicine		
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	MM/YY	FIELD OF STUDY
University of Detroit, Detroit, MI	B.S.	5/1974	Biology
Wayne State University School of Medicine, Detroit	M.D.	5/1979	Medicine
Internal Medicine Resident, Detroit General and Harper Hospital, Wayne State University	Postdoctoral	6/1982	Internal Medicine
Chief Medical Resident, Harper Hospital, Wayne State University, Detroit, MI	Postdoctoral	6/1983	Internal Medicine
Fellow, Infectious Disease, University of Michigan, Ann, Arbor, MI	Postdoctoral	6/1986	Infectious Diseases

### A. Personal Statement

As Division Head for Infectious Diseases for a large urban health center in Detroit, my area of practice and research is in epidemiology, control of hospital related infections including antibiotic resistant bacteria, and including measures to improve outcome and public health. I am responsible for a variety of patient management, quality improvement and infection prevention efforts and have published extensively in the field. The work has included both national and international work. Much of this work has been in collaboration with the WHO, NIH, US CDC, government, Public Health and Industry partners. Recent local work has included partnerships with the Detroit Mayor office and Detroit Health Department in COVID-19 response and control efforts. I am uniquely suited to participate in this project, having extensive and recognized experience as an independent researcher, teacher, administrator, epidemiologist and clinician. I have been PI on over 400 industry and federal grants with millions of dollars in external grant awards, and continuous federal grant funding for the last 38 years. I have authored over 370 peer review publications, and 570 abstracts at national or international meetings. I have expertise in not only research in infectious disease but also am an active clinician and teacher. I have presented hundreds of lectures, grand rounds, invited professorships, conference moderator both nationally and internationally. I have directly supervised over 90 post-doctoral fellows and early career faculty, and hundreds of students and residents during their infectious disease rotations and research projects. I have a demonstrated successful mentorship record with post-doctoral fellows supervised with the trainees going on to full time successful clinical and academic appointments at institutions that include Yale School of Medicine, University of Michigan, international locations and others. My former mentees have gone on to various important leadership positions including secretary and president of our national societies, Division Heads of Infectious Diseases sections, Chair of Medicine, and Editor or Section Editor of important journals. My current local work includes work as advisor to Mayor office and Detroit Health Department in COVID response for the City. My international work includes work on projects related to COVID and antimicrobial resistance and stewardship in 20 low and middle income countries and 80 hospitals, in collaboration with WHO, and National Ministries of Health.



My background and experience makes me fully qualified to take a role in the investigative team that is part of this important project. I feel the project has potential to provide important new information, lead to information that will provide information that will be of great interest to others, will ultimately contribute to science and impact public health.

## **B. Positions and Honors**

### **Positions and Employment**

1986-1988	Assistant Professor, Departments of Internal & Laboratory Medicine, Section of Infectious Diseases, Yale School of Medicine, New Haven, CT
1986-1988	Associate Hospital Epidemiologist, Yale New Haven Hospital, New Haven, CT
1988-1991	Clinical Assistant Professor, Wayne State University School of Medicine, Detroit, Michigan
1992-1999	Clinical Associate Professor, Department of Internal Medicine, Infectious Diseases Division, Wayne State University, Detroit, MI
1995-2005	Director, Clinical Microbiology Laboratory, Department of Clinical Pathology, William Beaumont Hospital, Royal Oak, MI
2002-2005	Director, Molecular Pathology Laboratory, Department of Clinical Pathology, William Beaumont Hospital, Royal Oak, MI
1999-2004	Director, Research Institute, William Beaumont Hospital, Royal Oak, MI
2007-2014	Associate Director of Research for Clinical Trials, Henry Ford Health System, Detroit, MI
1999-present	Professor of Medicine, Department of Internal Medicine, Infectious Diseases Division, Wayne State University School of Medicine, Detroit, Michigan
2005-12, and 2014-2015	Medical Director, Infection Control, Henry Ford Health System, Detroit, MI
2005-present	Division Head, Infectious Diseases, Henry Ford Health System, Detroit, MI
2019-present	Assistant Dean, Global Affairs, Wayne State University School of Medicine, Detroit, MI
2020-present	Advisor, City of Detroit Mayor Office, COVID-19 Response

### **Other Experience and Professional Memberships (external selected)**

1980-present	Member, Fellow American College of Physicians (ACP)
1978-present	Member, Alpha Sigma Nu
1984-present	Member, American Society for Microbiology (ASM)
1989, present	Member, Fellow Infectious Disease Society of America (IDSA)
1992-present	Member, Society for Hospital Epidemiology (SHEA)
1986-present	Reviewer, multiple journals, Former Section Editor, Infection Control and Hospital Epidemiology, J Antimicrob Chemo
1988-present	Advisory Panels, multiple, Review Committees, NIH, CDC, EU, Internal

### **Honors (selected)**

2000	Awarded the CDC, James H. Nakano Citation and Charles C. Shepard Science Awards for work with resistant <i>Staphylococcus aureus</i>
2014	7 <sup>th</sup> Honorary Benjamin Pulimood Lecture, Antimicrobial Resistance in Gram Positive Bacteria, Christian Medical College, Vellore, India
2015	Wayne County Medical Society, Sophie Womack Humanitarian Award
2016	American College of Physicians: Laureate Award

## **C. Contributions to Science (Selected from 345 publications, and 550 abstracts)**

Selected recent work is as follows:

1. Bony PJ, Adrien P, Lemoine JF, Existe A, Henry PJ, Raccurt CP, Brasseur P, Fenelon N, Dame JB, Okech BA, Kaljee LM, Baxa DM, Prieur E; Elbadry MA; Tagliamonte MS, Mulligan CJ, Carter TE, Madsen

- VE, de Rochars B, Lutz C, Parke DM, **Zervos MJ** Malaria elimination in Haiti by the year 2020: an achievable goal?. *Malar J*. 2015 Jun 5;14:237. doi: 10.1186/s12936-015-0753-9.
2. Bardossy AC, Zervos J, **Zervos M** Preventing Hospital-acquired Infections in Low-income and Middle-income Countries: Impact, Gaps, and Opportunities. *Infect Dis Clin North Am*. 2016 Sep;30(3):805-18. doi: 10.1016/j.idc.2016.04.006
  3. Albrecht VS, **Zervos MJ**, Kaye KS, Tosh PK, Arshad S, Hayakawa K, Kallen AJ, McDougal LK, Limbago BM, Guh AY. Prevalence of and Risk Factors for Vancomycin-Resistant *Staphylococcus aureus* Precursor Organisms in Southeastern Michigan. *Infect Control Hosp Epidemiol*. 2014 Dec;35(12):1531-4. PMID: 25419776
  4. Harris AD, Pineles L, Belton B, Johnson JK, Shardell M, Loeb M, Newhouse R, Dembry L, Braun B, Perencevich EN, Hall KK, Morgan DJ; Benefits of Universal Glove and Gown (BUGG) Investigators, Shahryar SK, Price CS, Gadbow JJ, Drees M, Kett DH, Muñoz-Price LS, Jacob JT, Herwaldt LA, Sulis CA, Yokoe DS, Maragakis L, Lissauer ME, **Zervos MJ**, Warren DK, Carver RL, Anderson DJ, Calfee DP, Bowling JE, Safdar N. Universal glove and gown use and acquisition of antibiotic-resistant bacteria in the ICU: a randomized trial. *JAMA*. 2013 Oct 16;310(15):1571-80. PMID: 2409723
  5. Holland TL, Raad I, Boucher HW, Anderson DJ, Cosgrove SE, Aycock PS, Baddley JW, Chaftari AM, Chow SC, Chu VH, Carugati M, Cook P, Corey GR, Crowley AL, Daly J, Gu J, Hachem R, Horton J, Jenkins TC, Levine D, Miro JM, Pericas JM, Riska P, Rubin Z, Rupp ME, Schrank J Jr, Sims M, Wray D, **Zervos M**, Fowler VG Jr. Effect of Algorithm-Based Therapy vs Usual Care on Clinical Success and Serious Adverse Events in Patients with Staphylococcal Bacteremia: A Randomized Clinical Trial. *JAMA*. 2018 Sep 25;320(12):1249-1258. doi: 10.1001/jama.2018.13155
  6. Cassone M, Mantey J, Perri MB, Gibson K, Lansing B, McNamara S, Patel PK, Cheng VCC, Walters MS, Stone ND, **Zervos MJ**, Mody L. Environmental Panels as a Proxy for Nursing Facility Patients With Methicillin-Resistant *Staphylococcus aureus* and Vancomycin-Resistant *Enterococcus* Colonization. *Clin Infect Dis*. 2018 Aug 31;67(6):861-868. doi: 10.1093/cid/ciy115. PMID: 29726892
  7. Lodise TP, Rosenkranz SL, Finnemeyer M, Evans S, Sims M, **Zervos MJ**, et al The Emperor's New Clothes: Prospective Observational Evaluation of the Association between Initial Vancomycin Exposure and Failure Rates among Adult Hospitalized Patients with MRSA Bloodstream Infections (PROVIDE). *Clin Infect Dis*. 2019 Jun 3
  8. Rupali P, Palanikumar P, Shanthamurthy D, Peter JV, Kandasamy S, Zacchaeus NGP, Alexander H, Thangavelu P, Karthik R, Abraham OC, Michael JS, Paul H, Veeraraghavan B, Chacko B, Jeyaseelan V, Alangaden G, Prentiss T, **Zervos MJ**. Impact of an antimicrobial stewardship intervention in India: Evaluation of post-prescription review and feedback as a method of promoting optimal antimicrobial use in the intensive care units of a tertiary-care hospital. *Infect Control Hosp Epidemiol*. 2019 May;40(5):512-519
  9. Mody L, Washer LL, Kaye KS, Gibson K, Saint S, Reyes K, Cassone M, Mantey J, Cao J, Altamimi S, Perri M, Sax H, Chopra V, **Zervos M** Multidrug-resistant Organisms in Hospitals: What Is on Patient Hands and in Their Rooms? *Clin Infect Dis*. 2019 Apr 13
  10. Diekema DJ, Pfaller MA, Shortridge D, **Zervos M**, Jones RN Twenty-Year Trends in Antimicrobial Susceptibilities Among *Staphylococcus aureus* From the SENTRY Antimicrobial Surveillance Program. *Open Forum Infect Dis*. 2019 Mar 15;6(Suppl 1):S47-S53. doi: 10.1093/ofid/ofy270. eCollection 2019 Mar. Erratum in: *Open Forum Infect Dis*. 2019 May 20;6(5):ofz202. PMID: 30895214
  11. Fowler VG Jr, Das AF, Lipka-Diamond J, Schuch R, Pomerantz R, Jáuregui-Peredo L, Bressler A, Evans DC, Moran GJ, Rupp ME, Wise RA, Corey GR, **Zervos M**, Douglas PS, Cassino C. Exebacase for *Staphylococcus aureus* bloodstream infection and endocarditis. *J Clin Invest*. 2020 Apr 9. pii: 136577. doi: 10.1172/JCI136577. [Epub ahead of print] PMID: 32271718
  12. Cassone M, Zhu Z, Mantey J, Gibson KE, Perri MB, **Zervos MJ**, Snitkin ES, Foxman B, Mody L. Interplay Between Patient Colonization and Environmental Contamination With Vancomycin-Resistant Enterococci and Their Association With Patient Health Outcomes in Post acute Care. *Open Forum Infect Dis*. 2019 Dec 11;7(1):ofz519. doi: 10.1093/ofid/ofz519. eCollection 2020 Jan. PMID: 31988973
  13. Bakthavatchalam YD, Babu P, Munusamy E, Dwarakanathan HT, Rupali P, **Zervos M**, John Victor P, Veeraraghavan B. Genomic insights on heterogeneous resistance to vancomycin and teicoplanin in Methicillin-resistant *Staphylococcus aureus*: A first report from South India. *PLoS One*. 2019 Dec 30;14(12):e0227009. doi: 10.1371/journal.pone.0227009. eCollection 2019. PMID: 31887179.
  14. Suleyman G, Fadel RA, Malette KM, Hammond C, Abdulla H, Entz A, Demertzis Z, Hanna Z, Failla A, Dagher C, Chaudhry Z, Vahia A, Abreu Lanfranco O, Ramesh M, Zervos MJ, Alangaden G, Miller J, and Brar I.

Clinical Characteristics and Morbidity Associated With Coronavirus Disease 2019 in a Series of Patients in Metropolitan Detroit. JAMA Netw Open 2020; 3(6). PMID: 32543702.

15. Sanchez GV, Biedron C, Fink LR, Hatfield KM, Polistico JMF, Meyer MP, Noe RS, Copen CE, Lyons AK, Gonzalez G, Kiama K, Lebednick M, Czander BK, Agbonze A, Surma AR, Sandhu A, Mika VH, Prentiss T, Zervos J, Dalal DA, Vasquez AM, Reddy SC, Jernigan J, Kilgore PE, Zervos MJ, Chopra T, Bezold CP, Rehman NK. Initial and Repeated Point Prevalence Surveys to Inform SARS-CoV-2 Infection Prevention in 26 Skilled Nursing Facilities — Detroit, Michigan, March–May 2020. MMWR Morb Mortal Wkly Rep. 2020 Jul 10;69(27):882-886. doi: 10.15585/mmwr.mm6927e1.

#### **D. Research Support**

**Current Research Support:** Grants for which Dr Zervos is PI or site PI, not inclusive of grants for which Dr Zervos is Sub I see attached.

## BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.  
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME <b>Chopra, Teena</b>  eRA COMMONS USER NAME (credential, e.g., agency login)	POSITION TITLE <b>Professor</b>		
EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	MM/YY	FIELD OF STUDY
Dayanand Medical College, Ludhiana, India	MBBS	2001	Medicine & Surgery
Detroit Medical Center/Wayne State University, Detroit	Residency	2008	Internal Medicine
Detroit Medical Center/Wayne State University, Detroit	Fellowship	2010	Infectious Diseases and Infection Control
Detroit Medical Center/Wayne State University, Detroit	Fellowship	2011	Infection Control and Hospital Epidemiology
Wayne State University, School of Public Health, Detroit	MPH	2011	Masters in Public Health

### A. Personal Statement

In my present role, I serve as the Corporate Director of Infection Prevention, Hospital Epidemiology and Antibiotic Stewardship at the Detroit Medical Center and Wayne State University in Detroit, Michigan. I also serve as Director of Infection Prevention, Hospital Epidemiology and Antibiotic Stewardship at Vibra Hospital, a Long-term Care Facility located in Detroit. My research interests include Epidemiology of Health care associated Infections, Infection Prevention, Antibiotic Stewardship and Immunization.

I have published over 80 papers in various journals and book chapters. Additionally, I have independently reviewed over 60 journal articles. I have a special interest in immunization and studying the epidemiology of infections, including *Clostridium difficile* and Multi-Drug Resistant Organisms. My recent COVID -19 resident-wide field testing in 26 Detroit City nursing homes and follow-up consults with nursing staff and administrators will attest to my abilities to help manage outbreaks and provide support. I have championed the mammoth task of leading the COVID-19 pandemic for Wayne State University and DMC and currently serve on the president's COVID task force and on the President's Public health committee. I have also helped educate my beloved community through countless media and print interviews including CNN, FOX, NPR and TIME magazine. I am honored to be nominated for the Research Excellence Award and thank the committee for considering me worthy of it.

1. Guillermo V. Sanchez, MSHS, MPH; Caitlin Biedron, MD; Lauren R. Fink, MPH, et al. Initial and Repeated Point Prevalence Surveys to Inform SARS-CoV-2 Infection Prevention in 26 Skilled Nursing Facilities — Detroit, Michigan, March–May 2020. Centers for Disease Control MMWR, July 1, 2020. <https://www.cdc.gov/mmwr/volumes/69/wr/pdfs/mm6927e1-H.pdf>
2. **Chopra T**, Levy P, Tillotson G, Sobel J. Covid-19 Corollary: The Changing Role of a Hospital Epidemiologist in the New World. Expert Rev Anti Infect Ther. 2020 Aug 17. doi: 10.1080/14787210.2020.1807941. Online ahead of print. PMID: 32799575 No abstract available.
3. **Chopra T**, Sobel J. Detroit Under Siege, the Enemy Within: The Impact of the Covid-19 Collision. Infect Control Hosp Epidemiol. 2020 Apr 21:1. doi: 10.1017/ice.2020.154. Online ahead of print. PMID: 32312338
4. Sandhu A, Tillotson G, Polistico J, Salimnia H, Cranis M, Moshos J, et al. *Clostridioides difficile* in COVID-19 patients, Detroit, Michigan, USA, March–April 2020. Emerg Infect Dis. 2020 Sep [date cited]. <https://doi.org/10.3201/eid2609.202126>

## B. Positions and Honors

- 2005-2008 Resident, Department of Internal Medicine A, Detroit Medical Center/Wayne State University, Detroit
- 2008-2010 Clinical Fellow, Department of Infectious Diseases, Detroit Medical Center/Wayne State University, Detroit
- 2010-2011 Clinical Fellow, Research Scholar, Department of Infection Control, Detroit Medical Center, Wayne State University, MI
- 2011-2016 Assistant Professor of Medicine, Division of Infectious Diseases, Associate Corporate Director, Infection Prevention Epidemiology and Antibiotic Stewardship, DMC and WSU, Director, Infection Prevention, Epidemiology and Antibiotic Stewardship, Kindred Hospital, Detroit, MI
- 2016-2020 Associate Professor of Medicine, Division of Infectious Diseases, Associate Corporate Director, Infection Prevention Epidemiology and Antibiotic Stewardship, DMC and WSU, Director, Infection Prevention, Epidemiology and Antibiotic Stewardship, Kindred Hospital, Detroit, MI
- 2020-present Professor of Medicine, Division of Infectious Diseases, Associate Corporate Director, Infection Prevention Epidemiology and Antibiotic Stewardship, DMC and WSU, Director, Infection Prevention, Epidemiology and Antibiotic Stewardship, Kindred Hospital, Detroit, MI

## C. Contributions to Science

**1. Furthering the understanding of *Clostridium difficile* as a hospital acquired infection and its epidemiology:** I am among the top *C. difficile* experts in the world and have made great strides in the understanding of mechanisms underlying infection. I have made significant discoveries in treatment, epidemiology, and prevention.

- a. Krishna A\*, Pervaiz A, Lephart P, Tarabishy N, Varakantam S, Kotecha A, Awali RA, Kaye KS, **Chopra T**. Prevalence of *Clostridium difficile* infection in acute care hospitals, long-term care facilities, and outpatient clinics: Is *Clostridium difficile* infection underdiagnosed in long term care facilities patients? Am J Infect Control. 2017 Jun 8. pii: S0196-6553(17)30634-X. doi: 10.1016/j.ajic.2017.04.288. PMID: 28602273. Role: Study design, analysis and manuscript review. Impact Factor 1.929 Citations 1. \*Trainee mentored by Dr. Chopra.
- b. **Chopra T**, Awali RA, Biedron C, Vallin E, Bheemreddy S, Saddler CM, Mullins K, Echaiz JF, Bernabela L, Severson R, Marchaim D, Lephart P, Johnson L, Thyagarajan R, Kaye KS, Alangaden G. Predictors of *Clostridium difficile* infection-related mortality among older adults. Am J Infect Control. 2016 Nov 1;44(11):1219-1223. Role: Study design, analysis and manuscript review. Impact Factor 1.929 Citations 6.
- c. **Chopra T**, Neelakanta A, Dombecki C, Awali RA, Sharma S, Kaye KS, Patel P. Burden of *Clostridium difficile* Infection on hospital readmissions and its potential impact under the Hospital Readmission Reduction Program. Am J Infect Control. 2015 Apr 1;43(4):314-7. doi: 10.1016/j.ajic.2014.11.004. Erratum in: Am J Infect Control. 2015 Dec 1;43(12):1382. PMID: 25838133. Role: Study design, analysis and manuscript review. Impact Factor 1.929 Citations 11.
- d. **Chopra T**, Chandrasekar P, Salimnia H, Heilbrun LK, Smith D, Alangaden GJ. Recent epidemiology of *Clostridium difficile* infection during hematopoietic stem cell transplantation. Clin Transplant. 2011 Jan-Feb; 25(1): E82-7. Role: Data abstraction, analysis and manuscript writing. Impact Factor 1.518 Citations 69.

**2. I have contributed to knowledge of epidemiology and economic burden of patients with infected pressure ulcers:**

- a. **Chopra T**, Kaye K, Sobel J. Gunshot Injury Paraplegics-A Population Dying a Slow, Irreversible, and Expensive Death-A Viewpoint on Preventing Pressure Ulcers. Infect Control Hosp Epidemiol. 2017

Jun;38(6):759-760. doi: 10.1017/ice.2017.33. Epub 2017 Apr 3. No abstract available. PMID: 28367788. Role: Study design, analysis and manuscript review. Impact Factor 3.084 Citations 0.

- b. **Chopra T**, Marchaim D, Awali RA, Lavine M, Sathyaprakash S, Chalana IK, Ahmed F, Martin ET, Sieggreen M, Sobel JD, Kaye KS. Risk Factors and acute in-hospital costs for infected pressure ulcers among gunshot-spinal cord injury victims in southeastern Michigan. *Am J Infect Control*. 2016 Mar 1; 44(3):315-9. Role: Study design, analysis and manuscript review. Impact Factor 1.929 Citations 6.

### 3. I have contributed to a more comprehensive understanding of antibiotic use and resistance in ambulatory, long-term, and acute care settings:

- a. Physicians' attitude and knowledge regarding antibiotic use and resistance in ambulatory settings. Harris A\*, Chandramohan S\*, Awali RA, Grewal M\*, Tillotson G, **Chopra T**. *Am J Infect Control*. 2019 Mar 26. Role: Study design, analysis and manuscript review. Impact Factor 1.929. \* 1. \*Students mentored by Dr. Chopra.
- b. **Chopra T**, Rivard C, Awali RA, Krishna A, Bonomo RA, Perez F, Kaye KS. Epidemiology of Carbapenem-Resistant *Enterobacteriaceae* at a Long-term Acute Care Hospital. *Open Forum Infect Dis*. 2018 Oct 3;5(10): ofy224. doi: 10.1093/ofid/ofy224. eCollection 2018 Oct. PMID: 30302351. Role: Study design, analysis and manuscript review. Impact Factor 3.240 Citations 0.
- c. **Chopra T**, Marchaim D, Veltman J, Johnson P, Zhao JJ, Tansek R, Hatahet D, Chaudhry K, Pogue JM, Rahbar H, Chen TY, Truong T, Rodriguez V, Ellsworth J, Bernabela L, Bhargava A, Yousuf A, Alangaden G, Kaye KS. Impact of cefepime therapy on mortality among patients with bloodstream infections caused by extended-spectrum-B-lactamase-producing *Klebsiella pneumoniae* and *Escherichia coli*. *Antimicrob Agents Chemother*. 2012 Jul; 56(7):3936-42. Role: Data analysis and write up of the manuscript. Impact Factor 4.476 Citations 81.
- d. **Chopra T**, Marchaim D, Awali RA, Krishna A, Johnson P, Tansek R, Chaudary K, Lephart P, Slim J, Hothi J, Ahmed H, Pogue JM, Zhao JJ, Kaye KS. Epidemiology of bloodstream infections caused by *Acinetobacter baumannii* and impact of drug resistance to both carbapenems and ampicillin-sulbactam on clinical outcomes. *Antimicrob Agents Chemother*. 2013 Dec; 57(12):6270-5. Role: Study design, analysis and manuscript review. Impact Factor 4.476 Citations 54.

### 4. I have contributed to the overall understanding of Covid-19 epidemiology:

- a. Guillermo V. Sanchez, MSHS, MPH; Caitlin Biedron, MD; Lauren R. Fink, MPH, et al. Initial and Repeated Point Prevalence Surveys to Inform SARS-CoV-2 Infection Prevention in 26 Skilled Nursing Facilities — Detroit, Michigan, March–May 2020. *Centers for Disease Control MMWR*, July 1, 2020. <https://www.cdc.gov/mmwr/volumes/69/wr/pdfs/mm6927e1-H.pdf>
- b. **Chopra T**, Sobel J. Detroit Under Siege, the Enemy Within: The Impact of the Covid-19 Collision. *Infect Control Hosp Epidemiol*. 2020 Apr 21:1. doi: 10.1017/ice.2020.154. Online ahead of print. PMID: 32312338
- c. Sandhu A, Tillotson G, Polistico J, Salimnia H, Cranis M, Moshos J, et al. *Clostridioides difficile* in COVID-19 patients, Detroit, Michigan, USA, March–April 2020. *Emerg Infect Dis*. 2020 Sep [date cited]. <https://doi.org/10.3201/eid2609.202126>

### 5. I have contributed to Influenza research:

- a. Awali RA\*, Samuel PS, Marwaha B, Ahmad N, Gupta P, Kumar V, Ellsworth J, Flanagan E, Upfal M, Russell J, Kaplan C, Kaye KS, **Chopra T**. Understanding health care personnel's attitudes toward mandatory influenza vaccination. *Am J Infect Control*. 2014 Jun;42(6):649-52. doi: 10.1016/j.ajic.2014.02.025. PMID: 24837116. Role: Study design, analysis and manuscript review. Impact Factor 1.929 Citations 10. \*Trainee mentored by Dr. Chopra.
- b. **Chopra T**, Binienda J, Mohammed M, Shyamraj R, Long P, Bach D, Carlton C, Peters S, Lephart P, Alangaden G, Dhar S, Marchaim D, Schreiber M, Kaye KS. A practical method for surveillance of novel H1N1 influenza using automated hospital data. *Infect Control Hosp Epidemiol*. 2011 Jul; 32(7):700-2. Role: Design, analysis and manuscript writing. Impact Factor 3.084 Citations 5.

### 6. I have contributed to research with MDROs:

- a. **Chopra T**, Rivard C, Awali RA, Krishna A, Bonomo RA, Perez F, Kaye KS. Epidemiology of Carbapenem-Resistant *Enterobacteriaceae* at a Long-term Acute Care Hospital. *Open Forum Infect*

Dis. 2018 Oct 3;5(10): ofy224. doi: 10.1093/ofid/ofy224. eCollection 2018 Oct. PMID: 30302351. Role: Study design, analysis and manuscript review. Impact Factor 3.240 Citations 0.

- b. Dhar S, Martin ET, Lephart PR, McRoberts JP, **Chopra T**, Burger TT, Tal-Jasper R, Hayakawa K, Ofer-Friedman H, Lazarovitch T, Zaidenstein R, Perez F, Bonomo RA, Kaye KS, Marchaim D. Risk Factors and Outcomes for Carbapenem-Resistant *Klebsiella pneumoniae* Isolation, stratified by its Multilocus Sequence Typing: ST258 Verses Non-ST258. Open Forum Infect Dis. 2016 Feb 12;3(1). Role: Study design, analysis and manuscript review. Impact Factor 3.240 Citations 5.
- c. Tawney A, Semproch L, Lephart P, Valentine K, Thomas R, Asmar BI, **Chopra T**, McGrath EJ. Impact of Contact Isolation Precautions on Multi-Drug Resistant *Acinetobacter baumannii* in the Pediatric Intensive Care Unit. Infect Control Hosp Epidemiol. 2015 Sep;36(9):1108-10. doi: 10.1017/ice.2015.140. Epub 2015 Jun 5. PMID: 26047364. Role: manuscript review. Impact Factor 3.084 Citations 2.
- d. **Chopra T**, Marchaim D, Johnson PC, Chalana IK, Tamam Z, Mohammed M, Alkatib S, Tansek R, Chaudhry K, Zhao JJ, Pogue JM, Kaye KS. Risk factors for bloodstream infection caused by extended-spectrum B-lactamase-producing *Escherichia coli* and *Klebsiella pneumoniae*: A Focus on Antimicrobials including Cefepime. Am J Infect Control. 2015 Jul 1;43(7):719-23. doi: 10.1016/j.ajic.2015.02.030. Epub 2015 Apr 29. PMID: 25934068. Role: Study design, analysis and manuscript review. Impact Factor 1.929 Citations 15.

## D. Research Support

### Ongoing Research Support

1. Summit, A Phase 3, randomized, double-blind, active controlled study to compare the efficacy and safety of ridinilazole (200 mg, bid) for 10 days with vancomycin (125 mg, qid) for 10 days in the treatment of *Clostridium difficile* infection (CDI), sole PI, 2018-Ongoing.

### Completed Research Support

1. Cubist Pharmaceuticals, A Prospective Study to Quantify Interfacility movement of patients with *Clostridium difficile* Infection (CDI) and determine epidemiology of Recurrent CDI in Long Term Care Facilities, sole PI, \$66,456, 2012.
2. Pfizer Pharmaceuticals, Project Number: 421130 Protocol #3074A1-457, Evaluation of In Vitro Susceptibilities of Multi-Drug-Resistant Gram-Negative Organisms to Tigecycline and Other Agents: A Comparison Between Four Different Methods of Susceptibility Testing, Co-PI, annual direct costs \$292,853, 2009-2011  
Major Goals: This grant supports research analyzing in vitro susceptibility of multi-drug resistant gram-negative pathogens in southeastern Michigan.
3. NIH-NIAID, Project Number: 332269 Contract Number HHSN272201000039C: Randomized Control Trial for the Treatment of Extensively Drug-Resistant Gram-negative Bacilli, Co-PI, annual direct costs \$2,570,323, 2010-2012. Major Goals: This contract with the NIH supports a multi-center clinical trial studying the antimicrobial therapy of multi-drug-resistant pathogens.

**BIOGRAPHICAL SKETCH**

Provide the following information for the Senior/key personnel and other significant contributors.  
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Matthew Wayne Seeger

eRA COMMONS USER NAME (credential, e.g., agency login):

POSITION TITLE: Professor and Dean

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Start Date MM/YYYY	Completion Date MM/YYYY	FIELD OF STUDY
University of Evansville, IN	BA	08/1975	05/1979	Communication
Norther Illinois University, ILL	MA	09/1979	10/1980	Communication
Indiana University, IN	PhD	01/1981	09/1983	Communication Studies

**A. Personal Statement**

I am recognized as a leading international investigator in the areas of risk and crisis communication and health. This includes a range of threats including infectious disease outbreaks, environmental contaminations, natural disasters, technological failures, terrorism, pandemic disease, industrial accidents and related events. I am especially interested in factors that influence the ability of complex systems to accommodate risks and major disruptions. This includes resilience, planning, coordination, high reliability processes and related factors. My works has been instrumental in the development of the crisis and renewal framework and the Crisis and Emergency Risk Communication framework.

This research program has been supported with over \$7 million in extramural funding over the past decade. I have worked closely with the US Centers for Disease Control and Prevention on their emergency operations and crisis communication activities associated with anthrax, pandemic influenza, Ebola, Zika and various natural disasters. I am the co-author of the Centers for Disease Control and Prevention handbook for *Crisis and Emergency Risk Communication* (Second Edition, 2015). I served as a member of the World Health Organization Guidelines Development Group for Emergency Risk Communication and the Emergency and the WHO International Health Regulations (IHR) Roster of Experts. I have worked with the US Food and Drug Administration, the Federal Emergency Management Administration and the Department of Homeland Security on issues of risk and crisis communication, crisis planning and communication training. I have authored or co-authored eleven books on crisis and crisis communication and over 200 peer-reviewed publications. I have advised over 40 doctoral dissertations. I served as the founding editor of the *Journal of International Crisis and Risk Communication Research*. I received the Service Engagement Award and the Gerald M. Phillips Award for Distinguished Applied Communication Scholarship from the National Communication Association's. I am a member of the Public Relations Society of America Detroit Chapter Hall of Fame. I have been quoted in the *Washington Post*, *New York Times*, *Atlanta Journal Constitution* and *Rolling Stone* and appeared on CNN.

**B. Positions, Scientific Appointments and Honors**

I have been a faculty member, teaching and conducting research in crisis communication at Wayne State University since 1983.

**1983-1988 Assistant Professor, August, 1983:** Teaching courses in interpersonal, organization and communication theory, conducting crisis communication research.



- 1988-2003 Associate Professor, with tenure August, 1988:** Teaching courses in interpersonal, organization and communication theory, conducting crisis communication research.
- 2003-Present Professor:** Teaching courses in interpersonal, organization and communication theory, conducting crisis communication research.
- 2004-2011 Chair, Department of Communication:** Managed a department of 30 faculty and 800 students at the undergraduate, masters and doctoral level.
- 2011-Present Dean, College of Fine, Performing and Communication Arts:** Managed a college of 2500 students, 100 full time faculty in four departments. Offering undergraduate, masters, MFA and doctoral level degrees.

### **Awards, Grants, & Fellowships**

- 2019-2022** “Water and Health Infrastructure Resilience and Learning (WHIRL): Case Studies of Drinking Water Disasters.” Award Abstract #1832591 CRISP 2.0 four-year, \$1.57 million grant from the National Science Foundation.
- 2016** “Flint Area Community Health and Environmental Partnership.” State of Michigan. \$3.2 million. Project involving Legionella assessment in municipal water systems involving engineering, public health, infectious disease and communication. (Co P.I.).
- 2007** “The Recall system and the Foodborne Event,” Funded for \$12,000.00. National Center for Food Protection and Defense. (Co P.I.).
- 2006** Organizational Learning from the Anthrax Letters,” Funded for 17,500.00. Centers for Disease Control and Prevention. (Co P.I.).
- 2005-2009** “MAJOR: Engineering the unexpected: Socio-technical Issues in Management Systems for Bio hazardous emergencies” (Co P.I.). \$1.5 million over five years. National Science Foundation.
- 2003** “Michigan Crisis and Emergency Risk Communication Project” (Co P.I.). \$100,000. Develop crisis communication materials and provide training for the Michigan Department of Public Health in conjunction with the Centers for Disease Control, Focus Area F.

### **C. Contributions to Science**

My program of research focuses broadly on developing theoretical frameworks for understanding the role of communication in risk, crisis and emergency contexts, including pre-crisis, crisis and post crisis contexts. I have made extensive contributions to practice, primarily within the areas of public health, community response, emergency management, resilience and renewal.

#### **Selected Publications: Books**

Sellnow, T. & Seeger, M. W. (2020). Theorizing Crisis Communication. Foundations of Communication Theory Series.( 2<sup>nd</sup> ed) Malden, MA: Willey- Blackwell.

Seeger, M. W., & Sellnow, T. L. (2019). Communication in Times of Trouble. John Wiley & Sons.

Seeger, M., & Sellnow, T. (2016). Narratives of Crisis: Telling Stories of Ruin and Renewal (Vol. 19). Stanford University Press.

Schwarz, A., Seeger, M. W., & Auer, C. (Eds.). (2016). The Handbook of International Crisis Communication Research. John Wiley & Sons.

Reynolds, B., & Seeger, M. (2014). Crisis and emergency risk communication. Atlanta, GA: Centers for Disease Control and Prevention. Available: [http://emergency.cdc.gov/cerc/pdf/CERC\\_2012edition.pdf](http://emergency.cdc.gov/cerc/pdf/CERC_2012edition.pdf)

Ulmer, R.R., T. L. Sellnow, & M. W. Seeger (2013). Effective crisis communication: Moving from crisis to opportunity. Sage: Thousand Oaks, CA. (Third Edition). Also published in Russian and Chinese.

Sellnow, T. L., Ulmer, R. R., Seeger, M. W., & Littlefield, R. S. (2009). Effective risk communication: A message-centered approach. New York: Springer Science+Business Media, LLC. Also published in Chinese.

Seeger, M. W., Sellnow, T., Ulmer., R. R (2007). (Eds). Crisis Communication and the Public Health, Hampton Press: Cresskill, NJ.

Seeger, M., T. Sellnow & Ulmer, R. R. (2003). Organizational communication and crisis. Quorum Press.

### **Selected Peer Reviewed Journal Articles:**

Nowling, W. D., & Seeger, M. W. (2020). Sensemaking and crisis revisited: the failure of sensemaking during the Flint water crisis. *Journal of Applied Communication Research*, 48(2), 270-289.

Andrade, E. L., Barrett, N. D., Edberg, M. C., Rivera, M. I., Latinovic, L., Seeger, M. W., ... & Santos-Burgoa, C. (2020). Mortality reporting and rumor generation: An assessment of crisis and emergency risk communication following Hurricane María in Puerto Rico. *Journal of International Crisis and Risk Communication Research*, 3(1), 2.

O'Shay, S., Day, A. M., Islam, K., McElmurry, S. P., & Seeger, M. W. (2020). Boil Water Advisories as Risk Communication: Consistency between CDC Guidelines and Local News Media Articles. *Health Communication*, 1-11.

Sellnow-Richmond, D. D., Novak, J. M., & Seeger, M. W. (2020). The Communicative Relationship between the Socioeconomically Disadvantaged Stakeholders and the Reproductive Healthcare Nonprofit Organization. *Health Communication*, 1-12.

Day, A. M., O'Shay-Wallace, S., Seeger, M. W., & McElmurry, S. P. (2020). Gender and Presence of Children: Examining Media Uses, Informational Needs, and Source Preferences during the Flint, Michigan Water Crisis. *Journal of International Crisis and Risk Communication Research*, 3(2), 2.

Day, A. M., O'Shay-Wallace, S., Seeger, M. W., & McElmurry, S. P. (2019). Informational Sources, Social Media Use, and Race in the Flint, Michigan, Water Crisis. *Communication Studies*, 70(3), 352-376.

Seeger, M. W. (2018). Answering the Call for Scholarship: The Journal of International Crisis and Risk Communication Research. *Journal of International Crisis and Risk Communication Research*, 1(1), 1.

Seeger, M. W., Pechta, L. E., Price, S. M., Lubell, K. M., Rose, D. A., Sapru, S., & Smith, B. J. (2018). A Conceptual Model for Evaluating Emergency Risk Communication in Public Health. *Health Security*, 16(3), 193-203.

Wombacher, K., Herovic, E., Sellnow, T. L., & Seeger, M. W. (2018). The complexities of place in crisis renewal discourse: A case study of the Sandy Hook Elementary School shooting. *Journal of Contingencies and Crisis Management*, 26(1), 164-172.

Seeger, M. W. (2018). Answering the Call for Scholarship: The Journal of International Crisis and Risk Communication Research. *Journal of International Crisis and Risk Communication Research*, 1(1), 1.

- Liska, C., Petrun, E. L., Sellnow, T. L., & Seeger, M. W. (2012). Chaos theory, self-organization, and industrial accidents: Crisis communication in the Kingston coal Ash spill. *Southern Communication Journal*, 77(3), 180-197.
- Cheng, S. S., & Seeger, M. W. (2012). Lessons learned from organizational crisis: Business ethics and corporate communication. *International Journal of Business and Management*, 7(12), 74.
- Spence, P. R., McIntyre, J. J. Lachlan, K. A., Savage, M. E., & Seeger, M. W. (2011). Serving the Public Interest in a Crisis: Does Local Radio Meet the Public Interest? *Journal of Contingencies and Crisis Management*, 19(4). 227-232.
- Seeger, M. W. & Novak, J. M. (2010). Modeling the Recall and Warning Process in the Foodborne Contamination Event: Perspectives from Disaster Warnings and Crisis Communication. *International Journal of Mass Emergencies and Disasters*, 28, 1. 115-145.
- Pechta, L. E., Brandenburg, D. C., & Seeger, M. W. (2010). Understanding the dynamics of emergency communication: Propositions for a four-channel model. *Journal of Homeland Security and Emergency Management*, 7(1).
- Seeger, M. (2009). Does communication research make a difference? Reconsidering the impact of our work. *Communication Monographs*, 76, 1, 12-19.
- Spence, P.R., Lachlan, K., McIntyre, J. J., & Seeger, M. W. (2009) Serving the Public Interest in a Crisis: Radio and Its Unique Role. *Journal of Radio and Audio Studies*, 16,(2) 1-16.
- Veil, S., Reynolds, B., Sellnow, T. L., & Seeger, M. W. (2008). CERC as a theoretical framework for research and practice. *Health Promotion Practice* 9(4), 26S-34S.
- Ulmer, R. R., Seeger, M. W., & Sellnow, T. L. (2007). Post-crisis communication and renewal: Expanding the parameters of post-crisis communication. *Public Relations Review*, 33, 130-134.
- Spence, P.R., Lachlan, K., Burke, J. M. & Seeger, M. W. (2007). Media use and Informational Needs of the Disabled During a Natural Disaster. *Journal of Health Care for the Poor and Underserved*. 18, 394-404.
- Seeger, M. W. (2006). "Best practices in crisis and emergency risk communication." *Journal of Applied Communication Research*, 34, 3 232-244
- Reynolds, B. & Seeger, M. W. (2005). Crisis and Emergency Risk Communication as an integrative model. *Journal of Health Communication Research*. 10, 1 43-57.
- Seeger, M., Novak, J., Ulmer, R.,R., & Sellnow, T. (2005). Post crisis discourse and organizational change: Failure and renewal. *Journal of Organizational Change Management*, 18, 1, 78-95.
- Johnson, C.E., Sellnow, T. L., Seeger, M. W., Hasbargen, K (2004) "Blowing the whistle on the diet drug: An exploration of MeritCare's reporting of linkages between Fen-Phen and valvular heart disease." *Journal of Business Communication*, 41, 350-370.
- Seeger, M., & Ulmer, R. R. (2003). Explaining Enron: Communication and Responsible Leadership. *Management Communication Quarterly*, 58-85
- Seeger, M. W. (2002). Chaos and crisis: Propositions for a general theory of crisis communication. *Public Relations Review*, 28(4), 329-337.
- Sellnow, T., M. Seeger & Ulmer, R. R. (2002). Chaos theory, informational needs and the North Dakota floods. *Journal of Applied Communication Research*, 30, 269-2

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**BIOGRAPHICAL SKETCH**

NAME: David, Randy E.

eRA COMMONS USER NAME (credential, e.g., agency login): rdavid1

POSITION TITLE: Chief of Epidemiology, Director of CD Investigations, and Adjunct Clinical Professor

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
State University of New York at Binghamton, Binghamton, NY	B.S.	12/2009	Biological Anthropology & Pre-Health
State University of New York at Binghamton, Binghamton, NY	M.S.	05/2011	Biochemistry, Cell and Molecular Biology
State University of New York at Binghamton, Binghamton, NY	Graduate Certificate	05/2011	Evolutionary Studies
University of Kansas, Lawrence, KS	Ph.D.	09/2019	Genetics Program
University of California, Irvine, Irvine, CA	Postdoc	05/2021	Epidemiology and Molecular Population Genomics

**A. Personal Statement**

My current research interests revolve around equitably reducing communicable disease transmission and consequences. The COVID-19 pandemic, and particularly the recent emergence of the highly transmissible Delta and Omicron variants, have been at the forefront of global public health initiatives. When the first information about a novel coronavirus emerged in late 2019, I was engaged in malaria research in Ethiopia. Because of the consequences of the COVID-19 epidemic in Ethiopia, and an ensuing civil war, this research had to be paused. Since, I have made efforts to retool my research endeavors to benefitting the communities most affected by COVID-19 in the United States. Generally, my approach entails the integration genetics, epidemiology, anthropology, demography, and translational science, with the goal of assisting public health programs in being more finely tailored to the needs of vulnerable populations.

**B. Positions / Professional Memberships / Professional Presentations / Invited Lectures / Awards****Positions**

2008–2009	Laboratory Research Assistant, Reiber Laboratory of Evolutionary and Epidemiological Modeling, Biological Anthropology/Evolutionary Studies, Binghamton University, Binghamton, NY
2010–2011	Laboratory Research Assistant, Merriwether Laboratory, Biochemistry, Cell, & Molecular Biology, Binghamton University, Binghamton, NY
2012–2019	Research Associate & Senior Research Associate, University of Kansas, Lawrence, KS (1) Laboratories of Biological Anthropology (2) Laboratory of Human Molecular Genetics (LHMG)
2012–2019	Lecturer, University of Kansas, Lawrence, KS (1) Human Physiology (2) Molecular Biology (3) Public Health

- (4) Genetics  
 (5) Anthropology 2019–  
 2021 East Africa Field Director  
 International Centers for Excellence in Malaria Research (ICEMR)—Sub-Saharan Africa, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, MD  
*Field Locations:* (1) Addis Ababa, Ethiopia (2) Gambela Region, Ethiopia  
 2019–2021 Postdoctoral Research Scholar in Epidemiology and Molecular Population Genomics, Yan Lab, Infectious Disease Research Laboratory, Division of Population Health and Disease Prevention, Global Public Health, Health Sciences, University of California, Irvine, Irvine, CA  
 2021– Adjunct Professor, Family Medicine and Public Health Sciences, Wayne State University School of Medicine, Detroit, MI  
 2021– Chief of Epidemiology, Detroit Health Department, City of Detroit, Detroit, MI

### **Professional Memberships**

- 2015– Member, International Epidemiological Association  
 2016– Member, American Public Health Association  
 2016– Member, Council of State and Territorial Epidemiologists  
 2019– Member, Migration, Health, and Development Research Initiative (MHADRI), United Nations  
 2020– Research Administrators Certification Council (RACC)  
 2020– Fellow, American College of Healthcare Executives (FACHE)  
 2021– Key Member, Michigan Association for Local Public Health  
 2021– Board Member, Detroit Community-Academic Urban Research Center (Detroit URC), School of Public Health, University of Michigan  
 2021– Advisor, Detroit Metropolitan Area Community Survey (DMACS), Population Studies Center, University of Michigan, Ann Arbor, MI  
 2021– Advisor, Michigan Institute for Firearm Injury Prevention, University of Michigan, Ann Arbor, MI  
 2021– Advisory Board Member, Detroit East Medical Control Authority (DEMCA)  
 2021– Member, Michigan Association for Local Public Health (MALPH)  
 2021– Member, National Association of County and City Health Officials (NACCHO)  
 2021– Advisory Committee Member, Center for Emerging and Infectious Diseases (CEID), Wayne State University School of Medicine  
 2021– Member, Participatory Action for Access to Clinical Trials (PAACT) Steering Committee

### **Professional Presentations (and Published Abstracts):**

- Norton, J, Faust, RA, McFarlane, S, Withington, S, **David, RE**, et al. (March 2022). *Wastewater surveillance you can trust: Data definitions, structure, and transparency*. Public Health and Water Conference & Wastewater Surveillance Disease Surveillance Summit. Water Environment Federation/Centers for Disease Control and Prevention (CDC)/Ohio Water Environment Association, Cincinnati, OH.
- David, RE**, Crawford, MH. (October 2020). *Individual-level disassortative mating versus population-level sex-skewed gene flow: A modern example with implications for the interpretation of directional mating episodes*. American Society of Human Genetics National Meeting, San Diego, CA.
- Li, Y, Zhou, G, Zhong, D, Wang, X, **David, RE**, Lee, M-C, Hui, N, Yan, G. (November 2019). *Widespread Multiple Insecticide Resistance in Aedes Albopictus in Hainan Province, China*. American Society of Tropical Medicine and Hygiene Annual Meeting, National Harbor, MD.
- David, RE**. (April 2019). *The Architecture of Non-Recombining Genetic Markers in a Recent Population Amalgamation*, Graduate Research Symposium—Natural and Built Environments and their Effects, Latin American Studies, University of Kansas, Lawrence, KS.
- David, RE**. (March 2019). *The Molecular Consequences of Migration in a Regional Amazonian City*. American Association of Physical Anthropologists 88<sup>th</sup> Annual Meeting, Genetics Session, Cleveland, OH.
- Alden, SD, Beaty, KG, Barrett, C, **David, RE**, Tackney, J, Crawford, MH, O'Rourke, DH, Raff, J. (February 2019). *Genetic Structure of the Unangan Population of the Aleutian Islands*. 46<sup>th</sup> Annual Meeting of the Alaska Anthropological Association, Nome, AK.
- David, RE** and Dean, B. (February 2019). *A Sociogenetic Approach to Migration and Urbanization in Peruvian Amazonia*. Institute for Policy and Social Research, Center for Migration Research, University of Kansas, Lawrence, KS.
- David, RE** and Dean, B. (October 2017). *Yurimaguas and the Lower Huallaga River Valley: A Biocultural Approach to*

*Disruptive Patterns of Migration and Urbanization in Peruvian Amazonia—An Ideal Location for a Migration-Based Approach to Obesity.* 2<sup>nd</sup> International Human Migration Conference (Key Speakers): What can Genomic and Cultural Diversity Tell us About Migration? Mexico City, Mexico.

Crawford, MH, Alden, SD, **David, RE**, and Beaty, KG. (April 2017). *Genetic Structure of Populations of the Aleutian Archipelago Based on 750,000 SNP's.* American Association of Physical Anthropologists 86<sup>th</sup> Annual Meeting (Keynote Address), Genetics Session, New Orleans, LA.

**David, RE.** (April 2017). *Type II Diabetes Mellitus Contraction Correlates in Two Populations of the Peruvian Amazon.* Bohan Lecture and Research Symposium, Diabetes Institute, University of Kansas Medical Center, Kansas City, KS.

**David, RE.** (April 2016). *The Environment, Transmission, and Sequelae of Chikungunya Fever Infection in the City of Santo Domingo, Dominican Republic.* Invited Guest Lecturer, Merienda Lecture Series, Center for Latin American and Caribbean Studies, University of Kansas, Lawrence, KS.

Chittoor, G and **David, RE.** (April 2013). *Epidemiologic Investigation of Tuberculosis in a Mexican Population from Chihuahua State, Mexico: A Pilot Study.* 3<sup>rd</sup> Annual Texas Tuberculosis Symposium, San Antonio, TX.

### Invited Lectures

**David, RE.** (December 2021). Invited Senior Attendee, Northwell Health's 3<sup>rd</sup> Annual Gun Violence Prevention Forum: Roundtable Discussions. Virtual Teleconference.

**David, RE.** (November 2021). *An actionable public health CBPR approach to mitigating the effects of COVID-19 in underserved communities of Detroit, Michigan, USA,* Invited Guest Lecturer, Dr. Maria de Lourdes Munoz Moreno, Molecular Anthropology Seminar: Challenges and Achievements. Genetics and Molecular Biology Laboratory, CINVESTAV-IPN, Mexico City, Mexico.

**David, RE.** (September 2021). *Health Impacts on Children of Incarcerated Parents,* Invited Guest Lecturer, Detroit Breaking the Cycle Symposium, National Football League (NFL) Players Coalition and Pure Herat Foundation, Detroit, MI.

**David, RE.** (April 2019). *The Utility of Uniparental Genetic Markers in Epidemiology,* Invited Guest Lecturer, Dr. Christopher Haiman, Department of Preventive Medicine, Keck School of Medicine, University of Southern California, Los Angeles, CA.

**David, RE.** (March 2019). *Mitochondrial Control Region Diversity and Haplogroup Distribution in Latin America,* Invited Guest Lecturer, Dr. Noah Zaitlen, Neurology and Genetics, David Geffen School of Medicine, University of California, Los Angeles, Los Angeles, CA.

**David, RE.** (March 2019). *Mitochondrial DNA in Precision Population Health: Where Ancestry Meets Epidemiology,* Invited Guest Lecturer, Dr. Dan Eytan Arking, McKusick-Nathans Institute of Genetic Medicine, Johns Hopkins Medicine, Baltimore, MD.

**David, RE.** (March 2019). *The Function of Human Landscape Genomics in Both Communicable and Non-Communicable Disease Research.* Invited Guest Lecturer, Dr. Guiyun Yan, Division of Population Health and Disease Prevention, Program in Public Health, College of Health Sciences, University of California, Irvine, Irvine, CA.

**David, RE.** (December 2018). *Applications of Population Genomics to Drug Discovery: The Case of Non-Alcoholic Steatohepatitis (NASH).* Invited Guest Lecturer, Research and Development, Boehringer Ingelheim USA, Ridgefield, CT.

**David, RE.** (November 2018). *Genetic Diversity Patterns, Haplogroup Distribution, and Admixture in an Urban, Peruvian Amazonian Community Experiencing an Extended Period of Migratory Flux.* Invited Guest Lecturer, Carlos Bustamante, Ph.D., Department of Genetics, Genomics, and Bioinformatics, Stanford University Medical School, Stanford, CA.

**David, RE.** (November 2012). Collaborative Student Presentation and Discussant Panel Invitee, Comparative Human Ecodynamics on the Northern Ring of Fire: A GHEA (Global Human Ecodynamics Alliance) Workshop on the Aleutian and Kuril Islands, University of Washington, Seattle, WA.

### Awards

2006 Academic Achievement Scholarship, Binghamton University

2009 Undergraduate Research Award, Binghamton University

2012 The Kansas University Endowment Association Award, University of Kansas, Lawrence, KS

2012 Travel and Lodging award to attend, at the University of Washington, Seattle, WA: "Comparative Human Ecodynamics on the Northern Ring of Fire: A GHEA (Global Human Ecodynamics Alliance) Workshop on the Aleutian and Kuril Islands, National Science Foundation

2013 Carol Clark Award, University of Kansas

2014	Carol Clark Award, University of Kansas
2014	Tinker Foundation Field Research Award, Center for Latin American and Caribbean Studies, Tinker Foundation Inc.
2017	Pollitzer Award, American Association of Physical Anthropology
2017	Graduate Studies Summer Fellowship, University of Kansas
2017	Summer Institute in Statistical Genetics Travel and Registration Award through the National Institute of General Medical Sciences (NIH) FOA PAR-19-383 for Innovative Programs to Enhance Research Training (IPERT), University of Washington
2017	International Conference Travel Award, University of Kansas
2017	Dean's Office Research Excellence Fund Graduate Student and Post-Doctoral Fund Award, University of Kansas
2017	Graduate Scholarly Presentation Travel Fund Award, University of Kansas
2017	Center for Migration Research, Graduate Student Grant Program, University of Kansas
2017	Center for Migration Research, Seed Grant Program, University of Kansas
2018	Graduate Studies Research Support Award, University of Kansas
2020–2022	Loan Repayment Program National Institutes of Health (NIH), National Institute of Allergy and Infectious Diseases (NIAID), Health Disparities, (all accumulated federal student loans, > 100,000 USD)

### C. Contributions to Science

#### Population Genomic Architecture

Studying the genomic architecture of human populations illustrates both our distant evolutionary past as well as recent migratory and mating processes. I view population genomics as the foundation of medical genomics and genetic epidemiological research. The fundamental evolutionary processes of natural selection, gene flow, and genetic drift can be particularly informative to understanding the development of disease at populational and sub-populational levels. Population genomic research has shed light on (1) distribution of risk variants, (2) variable drug metabolism, (3) admixture as a determinant of disease progression, (4) linkage disequilibrium, (5) herd immunity, and (6) pathogen transmission processes. I have employed a range of laboratory and informatic approaches to describe populations genetically and assess how given structural differences (due to sex-skewed gene flow, variability in genetic diversity metrics, novel haplotypes, etc.) evolved, and how they may affect the health of a given population. I have conducted fieldwork in the Peruvian Amazon and Aleutian Archipelago (Alaska, USA), and have analyzed both autosomal DNA and uniparental (mitochondrial and non-recombining Y-chromosome) DNA markers. I am particularly interested in intergenerational gene flow (migration), and how this evolutionary force contributes to shaping disease susceptibility. Lastly, my interest in population genomics includes a focus on populations that have historically been underrepresented in research. By providing greater detail on the genomic architecture of these populations (Indigenous Americans, sub-Saharan Africans, African Americans, Latin Americans) we stand to improve health interventions in underserved communities. In addition to the works listed below, two manuscripts borne of my dissertation have been submitted to peer-reviewed journals.

- a. Domínguez-de-la-Cruz, E, de Lourdes Munoz, M, Pérez-Munoz, A, García-Hernández, N, Moctezuma-Meza, C, Hinojosa-Cruz, JC, **David, R E**. (2021). Protein isoforms expressed in breast cancer and matched normal adjacent tissue correlated with clinical features in a Mexican women population. *Experimental and Molecular Pathology*. Accepted.
- b. Crawford, M H, Alden, S D, **David, R E**, and Beaty, K. (2019). Unangan (Aleut) Migrations: Causes and Consequences. In Munoz Moreno, L & M H Crawford (Eds.), *“Human Migration: Biocultural Perspectives”*. Oxford, UK: Oxford University Press. 2021.
- c. **David, R E**. (2019). *The Creation of Metropolitan Amazonia: Genetic Consequences of Migration and Urbanization*. University of Kansas. Ann Arbor, MI: Proquest, UMI Dissertation Publishing.
- d. **David, R E**, and Dean, B. (2019). A Sociogenetic Approach to Migration and Urbanization in Peruvian Amazonia: Implications for Population Architecture. In Munoz Moreno, L & M H Crawford (Eds.), *“Human Migration: Biocultural Perspectives”*. Oxford, UK: Oxford University Press. 2021

#### Molecular Epidemiology of Infectious Disease

My research interests in the molecular epidemiology of infectious disease are based on the presence of complex systems of susceptibility and pathogenesis. My infectious disease interests generally involve a great degree of spatial and mathematical modeling. They include research into the human host, pathogen (and sometimes, vector). I have conducted fieldwork in the Dominican Republic and analyzed further epidemiological data from Mexico and China. I have attempted to address how a more detailed understanding of environment (of agent, vector, *and* host), including exposures, can be synthesized with evolutionary genomics to facilitate a public health perspective—tailored to the needs of a given population, and applicable to others. This work requires the use of similar in-field techniques as metabolic syndrome research, however, includes a noteworthy reliance on collaboration with local laboratory facilities and Ministries of Health.

- a. Chittoor, G, Arya, R, Farook, V S, **David, R E**, Puppala, S, Resendez, R G, Rivera-Chavira, B E, Leal-Berumen, I, Zenteno-Cuevas, R, López-Alvarenga, J C, Bastarrachea, R A, Curran, J E, Dhandayuthapani, S, Gonzalez, L, Blangero, J, Crawford, M H, Vlasich, E M, Escobedo, L G, Duggirala, R. (2013). Epidemiologic Investigation of Tuberculosis in a Mexican Population from Chihuahua State, Mexico: A Pilot Study. *Tuberculosis*, 93, S71-S77.
- b. Brito-Carreón, C, Zavala-Maldonado, K, **David, RE**, Diaz-Badillo, A, de Lourdes Munoz, M. (2021) Cell membrane enolase of *Aedes albopictus* C6/36 cells is involved in the entrance mechanism of dengue virus (DENV). *Journal of Asia-Pacific Entomology*. In press, 2022.
- c. Domínguez-de-la-Cruz, E, Muñoz, L, Hernández-García, E., Pérez-Ramírez, G, **David, RE**, Navarrete-Espinosa, J, Díaz-Badillo, Á, Moreno-Galeana, M, Brito-Carreón, CA. (2020). Dataset on the Epidemiology and Genetic Diversification of Dengue Virus (DENV) Serotypes and Genotypes in Mexico. *Data in Brief*. 32 (2020) 10607.
- d.
- e. Haileselassie, W, **David, RE**, et al. Land use change, burden of malaria and impact of prevention interventions in western Ethiopia: An ecological surveillance study. *BMC Public Health*. Accepted, 2022.
- f. Hernández-García, E, Muñoz, L, **David, RE**, Pérez-Ramírez, G, Navarrete-Espinosa, J, Díaz-Badillo, Á, Domínguez-de-la-Cruz, E, Moreno-Galeana, M, Brito-Carreón, CA. (2020). Epidemiological Implications of the Genetic Diversification of Dengue Virus (DENV) Serotypes and Genotypes in Mexico. *Infection, Genetics and Evolution*. 84 (2020) 104391.
- g. Li, Y, Zhou, G, Zhang, D, Wang, X, Hemming-Schroeder, E, **David, RE**, Lee, M-C, Zhong, S, Yi, G, Liu, Z, Cui, G, Yan, G. (2021). Widespread Multiple Insecticide Resistance in the Major Dengue Vector *Aedes albopictus* in Hainan Province, China. *Pest Management Science*. 77, 1945-1953. <https://doi.org/10.1002/ps.6222>

#### D. Additional Information: Ongoing/Completed Research Support

##### Ongoing Research Support

Centers for Disease Control and Prevention (CDC) <i>COVID-19 Community Health Corp</i>	Detroit Health Department	06/01/21–05/31/23
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The goal of this research is to establish and expand community-based efforts to mobilize community outreach workers, community health workers, patient navigators, social support specialists, and others, to increase vaccinations and other COVID-19 prophylactic measures in underserved communities. Infrastructure should be developed to share information about vaccines, build confidence, and address any potential barriers.

*Role:* Investigator

Great Lakes Water Authority <i>Wastewater Surveillance at the Great Lakes Water Authority (GLWA), Water Resource Recovery Facility (WRRF), and at Select Locations in Wayne, Macomb, and Oakland Counties: SARS-CoV-2 and Variants.</i>	Xagorarakis (PI)	2021–2022
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The goal of this research is to expand and validate the use of wastewater epidemiology to detect SARS-CoV-2 in the wastewater of metropolitan Detroit, and to correlate trends with clinical indicators of COVID-19.

*Role:* Investigator

US Department of Health and Human Services <i>Epidemiology and Laboratory Capacity (ELC) Enhancing Detection Expansion</i>	Detroit Health Department	2021–2023
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The goal of this research is to broaden PCR testing capability and accuracy for SARS-CoV-2 variants.

*Role:* Investigator

US Department of Health and Human Services	Xagorarakis (PI)	2021–2023
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*SARS-CoV-2 Epidemiology – wastewater evaluation and reporting (SEWER) network, Epidemiology and Laboratory Capacity (ELC) Enhancing Detection Expansion, Michigan State University*

The goal of this research is to expand and validate the use of wastewater epidemiology to detect SARS-CoV-2 in the wastewater of metropolitan Detroit, and to correlate trends with clinical indicators of COVID-19.

Role: Investigator

US Department of Health and Human Services                      Detroit Health Department                      2021–2025

*Detroit Bridge Air Quality and Health Assessment Initiative*

The goal of this research is to conduct a comprehensive health impact assessment (HIA) related to a proposed international suspension bridge, spanning Detroit, MI and Windsor, ON, Canada.

Role: Investigator

### **Completed Research Support**

National Geographic Society                      Crawford (PI)                      06/01/16–05/31/19

*Genographic Project 2.0 (GENO 2.0)*

The goal of this research was the analysis of broad networks of worldwide population migration, and related ancestry-informing markers, based on population genomics and anthropological genetics. My geographic research areas were the Aleutian Archipelago, Alaska, USA and San Martín and Loreto Regions of the Peruvian Amazon.

Role: Investigator

Diabetes Institute, University of Kansas Medical Center                      Crawford (PI)                      02/01/19–01/31/21

*Genetic-Environmental Correlates of Type II Diabetes Mellitus in Amazonian Populations*

The goal of this research was elucidating the genetic-environmental interactions that lead to type II diabetes mellitus and other comorbidities among admixed Indigenous Amazonians undergoing drastic environmental transitions

Role: Co-PI

NIH/NIAID U19 AI129326                      Yan (PI)                      04/15/17–03/31/24 (05/10/2021 for me)

*Environmental Modifications in Sub-Saharan Africa: Changing Epidemiology, Transmission, and Pathogenesis of Plasmodium falciparum and Plasmodium vivax Malaria*

The goal of this research was multifaceted. My input is in determining the role of population genomics and migration on the epidemiology, transmission, and pathogenesis of vivax malaria in Ethiopia.

Role: Investigator

US Department of Health and Human Services                      Detroit Health Department                      10/01/20–09/30/21

*COVID-19 Epidemiological Laboratory Capacity Contact Tracing TCVM*

The goal of this research was to develop better methods for detecting COVID-19 variants, such as “delta”, from collection of samples, contact tracing, standardization of evolutionary virology methods, PCR testing, and ultimately, public health reporting.

Role: Investigator

US Department of Health and Human Services                      Detroit Health Department                      10/01/20–09/30/21

*COVID-19 Epidemiological Laboratory Infection Prevention*

The goal of this research was to determine best laboratory practices to prevent the spread of COVID-19, particularly among the unvaccinated, given the backdrop of increased transmissibility associated with variants of concern.

Role: Principal Investigator (May 2021 onward)

Detroit Medical Center                      Detroit Health Department                      2021

*COVID-19 Expanded Testing Capacity*

The goal of this research was to increase the ability of public health entities to collaborate with healthcare facilities to provide timely and effective COVID-19 testing and reporting.

Role: Principal Investigator (May 2021 onward)

US Department of Health and Human Services                      Detroit Health Department                      2021

*COVID-19 Epidemiological Laboratory Capacity (ELC) Infection Prevention*

The goal of this research was to determine best laboratory practices to prevent the spread of COVID-19, particularly among the unvaccinated, given the backdrop of increased transmissibility associated with variants of concern.

Role: Principal Investigator (May 2021 onward)

US Department of Health and Human Services

Shuster (PI)

2021

*COVID-19 Epidemiological Laboratory Infection Prevention, SARS-CoV-2 Epidemiology – wastewater evaluation and reporting (SEWER) network, Wayne State University*

The goal of this research was to expand and validate the use of wastewater epidemiology to detect SARS-CoV-2 in Detroit wastewater.

Role: Investigator

## BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.  
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Verkler, Jelena Eve

eRA COMMONS USER NAME (credential, e.g., agency login): N/A

POSITION TITLE: Epidemiologist I at Henry Ford Hospital and Administrative Director for the Office of Global Affairs at Wayne State University

### EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of Illinois, Urbana-Champaign	BS	05/2015	Biology
University of Michigan, Ann Arbor	MPH	04/2018	Public Health and Epidemiology

### A. Personal Statement

I am a public health professional trained in global health epidemiology. My research interests include immunizations, antibiotic stewardship, and infectious disease. In my current role at Henry Ford Hospital, I have overseen the successful recruitment of 1,300 subjects for the Moderna and Johnson and Johnson COVID-19 vaccine trials. I have been involved in other projects involving antibiotic stewardship in low resource settings and have worked with the Detroit Health Department in covid mitigation and vaccine hesitancy projects. In my role as the Administrative Director for the Office of Global Affairs I have managed research and training collaborations in over 40 countries.

### B. Scientific Publications

1. El Sahly HM, Baden LR, Essink B, Doblecki-Lewis S, Martin JM, Anderson EJ, Campbell TB, Clark J, Jackson LA, Fichtenbaum CJ, Zervos M, Rankin B, Eder F, Feldman G, Kennelly C, Han-Conrad L, Levin M, Neuzil KM, Corey L, Gilbert P, Janes H, Follmann D, Marovich M, Polakowski L, Mascola JR, Ledgerwood JE, Graham BS, August A, Clouting H, Deng W, Han S, Leav B, Manzo D, Pajon R, Schödel F, Tomassini JE, Zhou H, Miller J; **COVE Study Group**. Efficacy of the mRNA-1273 SARS-CoV-2 Vaccine at Completion of Blinded Phase. *N Engl J Med*. 2021 Nov 4;385(19):1774-1785.
2. Sadoff J, Gray G, Vandebosch A, Cárdenas V, Shukarev G, Grinsztejn B, Goepfert PA, Truyers C, Fennema H, Spiessens B, Offergeld K, Scheper G, Taylor KL, Robb ML, Treanor J, Barouch DH, Stoddard J, Ryser MF, Marovich MA, Neuzil KM, Corey L, Cauwenberghs N, Tanner T, Hardt K, Ruiz-Guiñazú J, Le Gars M, Schuitemaker H, Van Hoof J, Struyf F, Douoguih M; **ENSEMBLE Study Group**. Safety and Efficacy of Single-Dose Ad26.COV2.S Vaccine against Covid-19. *N Engl J Med*. 2021 Jun 10;384(23):2187-2201.
3. Baden LR, El Sahly HM, Essink B, Kotloff K, Frey S, Novak R, Diemert D, Spector SA, Roupheal N, Creech CB, McGettigan J, Khetan S, Segall N, Solis J, Brosz A, Fierro C, Schwartz H, Neuzil K, Corey L, Gilbert P, Janes H, Follmann D, Marovich M, Mascola J, Polakowski L, Ledgerwood J, Graham BS, Bennett H, Pajon R, Knightly C, Leav B, Deng W, Zhou H, Han S, Ivarsson M, Miller J, Zaks T; **COVE Study Group**. Efficacy and Safety of the mRNA-1273 SARS-CoV-2 Vaccine. *N Engl J Med*. 2021 Feb 4;384(5):403-416.
4. Roehrs T, Withrow D, Koshorek G, **Verkler J**, Bazan L, Roth T. Sleep and pain in humans with fibromyalgia and comorbid insomnia: double-blind, crossover study of suvorexant 20 mg versus placebo. *J Clin Sleep Med*. 2020 Mar 15;16(3):415-421.

### C. Textbook Chapters

1. Roehrs, Timothy & **Verkler, Jelena** & Koshorek, Gail & Roth, Thomas. (2021). Sleep Disorders in Addiction: An Overview. 10.1007/978-3-030-36391-8\_83.

### D. Abstracts

1. Mohammad Sibai, Timothy Roehrs, Gail Koshorek, **Jelena Verkler**, Leslie Lundahl, 217 Sleep in heavy marijuana users after smoking differing THC doses compared to controls, *Sleep*, Volume 44, Issue Supplement\_2, May 2021, Page A87
2. Koshorek G, **Verkler J**, Withrow D, Roth T, and Roehrs T. Are people with severe insomnia able to discontinue hypnotics after chronic use? *Sleep* 2019; 42(Suppl 1):A153-A154.
3. Withrow D, **Verkler J**, Koshorek G, Roth T, and Roehrs T. Effects of suvorexant on pain sensitivity in fibromyalgia. *Sleep* 2019; 42(Suppl 1):A152.
4. **Verkler J**, Koshorek G, Roth T, and Roehrs T. Polysomnography in insomnia disorder. *Sleep* 2019; 42(Suppl 1):A137.
5. Koshorek G, **Verkler J**, Withrow D, Roth T, and Roehrs T. Effects of suvorexant on sleep in fibromyalgia. *Sleep* 2019; 42(Suppl 1):A152.

#### **E. Presentations**

1. **Verkler, J.** (2020, June). Sleep and Hyperarousal: Inability to Discontinue Chronic Hypnotic Use. Poster session presented at the annual College on Problems of Drug Dependence Conference.
2. **Verkler, J.** (2019, June). Effects of Suvorexant on Sleep in Fibromyalgia. Poster session presented at the annual SLEEP meeting
3. **Verkler, J.** (2019, June). Effects of Suvorexant on Pain Sensitivity in Fibromyalgia. Poster session presented at the annual SLEEP meeting
4. **Verkler, J.** (2017, Sept). Increasing Migrant Health Clinic Reporting to Michigan's Pesticide Illness and Injury Surveillance Program. Poster session presented at the annual Midwest Stream Forum for Agricultural Health.

# Appendix C SAPPHIRE Budget

Key Personnel	Role	Salary	Increase	Sal. requested	Effort	FB rate:	Year 1	Year 2	Total for 2	
							10/01/2021-09/30/2022	10/01/2022-07/31/2023	years	
Chopra, Teena	PI Medical Director	\$180,000	\$ 190,800	\$95,400	50.0%	\$26,14	\$121,54	\$104,32	\$225,86	
Hossein, Saline	Lab Director	\$160,000	\$ 169,600	\$84,800	50.0%	\$23,23	\$108,03	\$92,73	\$200,76	
Maples, Catherine	Research Assistant	\$62,000	\$65,720	\$32,860	50.0%	\$9,98	\$42,84	\$36,77	\$79,62	
Katerine Gurdizeil	Bioinformatics PhD	\$98,000	\$103,880	\$25,970	25.0%	\$7,89	\$33,86	\$29,06	\$62,93	
TBA	Epidemiology Public Health	\$88,000	\$93,280	\$18,656	20.0%	\$5,67	\$24,32	\$20,88	\$45,20	
TBA	Group Leader Manager	\$83,000	\$87,980	\$87,980	100.0%	\$26,74	\$76,48	\$95,604.9	\$172,08	
TBA	Medical Technologist	\$76,000	\$80,560	\$80,560	100.0%	\$24,49	\$70,03	\$87,541.8	\$157,57	
TBA	Medical Technologist	\$76,000	\$80,560	\$80,560	100.0%	\$24,49	\$70,03	\$87,541.8	\$157,57	
TBA	Molecular Lab Technician	\$40,000	\$42,400	\$42,400	100.0%	\$12,89	\$36,86	\$46,074.6	\$82,93	
Wanqing Liu: 25%	Lab Director	\$200,000	\$212,000	\$53,000	25.0%	\$16,11	\$46,07	\$57,593.3	\$103,66	
Anthony Lagina: 10%	Lab Tech	\$98,000	\$103,880	\$10,388	10.0%	\$3,15	\$9,03	\$11,288.2	\$20,31	
Benjamin Wasinski: 80%	Lab Tech	\$98,000	\$103,880	\$83,104	80.0%	\$25,26	\$72,24	\$90,306.3	\$162,55	
Ruth (ID: aj4013): 50%	Epidemiology Public Health	\$105,000	\$111,300	\$55,650	50.0%	\$16,91	\$48,37	\$60,473.0	\$108,85	
TBD (Research Assistant): 100%	Research Assistant	\$62,000	\$65,720	\$65,720	100.0%	\$19,97	\$57,13	\$71,415.7	\$128,54	
TBD PhD graduate students (GRAs): Stipends+Fringe benefit	PhD graduate assistant	\$98,000	\$103,880	\$103,880	100.0%	\$31,58	\$90,30	\$112,882.9	\$203,18	
<b>Salary Total</b>		<b>\$1,524,000</b>	<b>\$1,615,440</b>	<b>\$920,928</b>			<b>\$630,10</b>	<b>\$658,13</b>	<b>\$1,911,69</b>	
<b>Equipment (over \$5k items)</b>								<b>\$748,58</b>	<b>\$325,65</b>	<b>\$1,074,23</b>
Roche Cobas 6800	Quote from Roche	Approx. \$20,000/month lease					\$120,00	\$200,00		
Annual classic service cobas 6800	Quote from Roche						\$55,650	\$55,650		
Illumina MiSeq System							\$95,93			
Diasorin Liazon XL							\$100,00			
Tecan Freedom EVO system							\$70,00			
KingFisher RNA/DNA extraction system							\$70,00			
AirCleanSystem for fume controlled sample preparation X3							\$10,00			
ViiA 7 Real-Time PCR System							\$85,00			
Deep freezers x3							\$60,00			
Pipettes (25 sets)							\$70,00	\$70,00		
- 80 Freezer for sample storage							\$12,000			
Temperature regulated oven							\$1,500			
<b>Supplies</b>							<b>\$284,08</b>	<b>\$386,06</b>	<b>\$670,15</b>	
Annual Reagent (COVID, Influenza A&B, Syphillia, HIV various Testing)							\$180,00	\$240,00		
Ancillaries for Equipment							\$96,00	\$146,06		
Laptops for staff							\$4,58			
Label generation barcode system compatible with biobanking/sample throughput for PCR and sequencing at iBio							\$1,50			
Negative pressure laminar flow hood for sample prep							\$1,50			
Temp blocks to regulate 56C inactivation							\$50	\$50		
<b>Other Expenses</b>							<b>\$ 290,000.00</b>	<b>\$ 70,000.00</b>		
Lab Renovation							\$ 100,000.00			
Lab LIMS system							\$120,000			
Data statistical analysis							\$15,000	\$15,000		
Data storage and management							\$20,000	\$20,000		
marketing, communications, publications							\$25,000	\$25,000		
Disposables and consumables							\$10,00	\$10,00		
<b>Direct Costs</b>							<b>\$1,952,76</b>	<b>\$1,439,85</b>	<b>\$3,656,08</b>	
Indirect Costs					Institution F&A rate:	18.98%	\$370,63	\$273,28	\$643,91	
<b>Total Costs</b>							<b>\$2,323,40</b>	<b>\$1,713,13</b>	<b>\$4,300,00</b>	

Appendix D

**The Center's mission is to promote health by reducing the burden of diseases of Public Health importance through addressing health disparities and creating equity and inclusion in health systems and by provision of opportunities for professional training, research and service for high priority emerging infectious disease threats and public service to vulnerable populations. The Center will position Wayne State University School of Medicine as an international leader in public health preparedness and response.**

**CEID's primary mission is to enhance training, research, community engagement and public health infrastructure to address the development of methods to prepare for, prevent and treat emerging and re-emerging infectious and non-communicable diseases.**

**Activities will include research on vaccine development, clinical vaccine evaluation, introduction, and deployment of vaccines for special populations and communities with special attention to underserved populations, development of tools that facilitate recognition and response to outbreaks of emerging infectious disease threats, and research on evidence-based interventions that mitigate the impact of emerging infectious and non-communicable diseases.**

**VISION** [Consensus March 1, 2022]

**To be a global leader for education, research and practice for the control and prevention of emerging infectious diseases.**

Indicators:

- Our faculty and students are involved in innovative practices and research that advance science, improve patient care, and expand community access to tools that reduce their risk of infectious diseases.
- Our outreach to diverse community-based organizations results in improved knowledge for individuals, families, and parents on how to protect themselves against emerging and infectious diseases.
- We are positioned as thought leaders by other groups and organizations that seek to serve vulnerable populations at risk for emerging infectious diseases.
- Our researchers and students/graduates are differentiated and sought after because of their clinical and research skills and for their ability to provide evidenced-based care that ensures optimal health of the patient and of the public.
- Our research is internationally recognized for scientific and leadership contributions, and our trainees are highly sought after.
- The quality and impact of faculty collaborations across disciplines and practice settings is increasing.

## **WSU Center for Emerging and Infectious Diseases Strategic Plan, 2022-2027**

- We attract, develop, and retain the highest quality faculty and staff.
- Our faculty are actively involved in national and local leadership positions.
- Our curriculum is recognized as outstanding and viewed as a best practice.

### **MISSION** [Consensus March 1, 2022]

#### **Preparing health professionals and communities by developing and implementing solutions against emerging and pandemic infectious diseases.**

To promote health by reducing the burden of emerging infectious and pandemic diseases through provision of opportunities for professional training, research on high-priority disease threats and public service to vulnerable populations at local, country and international levels. With internal and external partners, the Center will position Wayne State University School of Medicine as an international leader in infectious disease preparedness and response.

We will accomplish this by:

- Developing successful education/service models that improve diagnosis, detection, treatment, and prevention of disease.
- Fostering a culture that promotes research, innovation, and service to community.
- Maintaining and establishing sustainable partnerships, collaborations, and strategic alliances within the community.
- Preparing graduate students, residents, and post-graduate fellows to be competitively positioned for entry into current and future practice and to obtain placement of choice.
- Fostering teamwork in education, practice, research, and service.
- Developing leaders and providing service and leadership to the profession and community.
- Conducting and disseminating collaborative translational research.

## STRATEGIC PLAN

### Preamble:

This identifies specific steps CEID will take to achieve its mission. The plan is a statement of our priorities, strengths, challenges, and goals.

Strategic focus CEID activities concerns the threat if high-priority diseases afflicting residents of Detroit and Michigan and the ways these threats may be managed and mitigated.

This plan identifies critical issues and directions for responding to challenges, supported by measurable stated outcomes, building on our strengths, and investing our resources. This plan is a living document, subject to continuous assessment and modifications as circumstances evolve. Considered and executed within the context of the Wayne State University plans, the Center for Emerging and Infectious Diseases plan will advance us closer to our goal of improving health in our greater community.

### **Priority 1. Create and disseminate knowledge and expertise that enables innovative prevention and control of emerging and infectious diseases.**

**Objective 1. Conduct clinical trials of novel vaccine candidates against infectious diseases that affect local communities and those across the United States and overseas.**

#### **Initiatives.**

- a. Conduct of clinical vaccine trials at the WSU Mott Clinical Trials Center.**
- b. Development of novel antibodies and compounds.**
- c. Evaluating the impact of vaccines on the reduction of antimicrobial resistance.**

**Objective 2. Participate in local, regional, national, and international scientific initiatives that enable strategic partnering to address population impact of emerging and infectious diseases.**

#### **Initiatives.**

- a. Participation in the NIH coordinated SeroNet system.**
- b. Collaboration with WHO for control of antimicrobial resistance.**



c. Community-based resilience training for infectious disease control.

d. Participate in investigations of behavioral health issues and infectious disease including vaccine hesitancy.

**Objective 3.** Create and deliver student and post-doctoral training programs that develop the next generation of leaders focused on control and prevention of emerging and pandemic infections.

**Initiatives.**

a. Development of a graduate level online certificate program in control and prevention of emerging infections.

b. Expand reach of the Global Health Research Course to a wider international audience.

c. Partner with federal agencies to develop trainee slots at WSU that develop multi-disciplinary expertise in social and biomedical sciences.

**Priority 2.** Improve health system preparedness to protect vulnerable populations from ongoing and future infectious disease threats.

**Objective 1.** Establishment of regional emerging infectious disease laboratory capacity for detection and characterization of infectious agents.

**Initiatives.**

a. Whole genome sequencing of pathogens causing multidrug resistant infections and emerging diseases.

b. Development of high throughput laboratory capacity that enables scale-up of testing in response to infectious disease outbreaks.

c. Training and education of laboratory technicians and support staff in diagnostic methods for emerging and pandemic infectious diseases.

**Objective 2.** Establish training and educational programs that empower health workers, community members, and residents with tools to combat emerging and pandemic infectious diseases.

**Initiatives.**

- a. Fostering diversity, equity, and inclusion among vulnerable residents to ensure their participation in development of appropriate vaccines and other tools that reduce health impact of emerging and pandemic infectious diseases.
- b. Innovative training and education to prevent and control infectious diseases among residents of skilled nursing facilities in Detroit.
- c. Deployment of infectious disease training curriculum for local public health department staff and community health workers serving Detroit and other residents.
- d. Develop a webinar series on current infectious and emerging disease issues.
- e. Provide targeted outreach and educational materials about emerging infectious diseases to community groups.

**Objective 3.** Develop and evaluate novel tools that foster early detection, reporting, analysis, and interventions to control disease outbreaks.

**Initiatives.**

- a. Develop resources to facilitate preparation, planning and effective response by health department staff, health systems and residents to emerging infectious disease outbreaks.
- b. Conduct landscape analysis of digital and deep learning tools that exist now to help improve abilities to predict and detect infectious disease outbreaks at the community level.
- c. Support local and national opportunities to evaluate environmental health tools that enable early pathogen detection and risk evaluation.

**Priority 3.** Foster public-private partnerships that leverage expertise from WSU and strategic partners to solve major emerging and infectious disease challenges.

**Objective 1.** Partner with diagnostic test and equipment manufacturers to build local and regional emerging infection laboratory capacity at WSU.

**Initiatives.**

- a. Implementation of nucleic acid-based testing to identify novel SARS-CoV-2 variants.
- b. Implementation of antimicrobial resistance testing to identify highly pathogenic multidrug resistant infections.
- c. Evaluate novel diagnostic platforms for their appropriateness and adaptation to the WSU regional laboratory.

**Objective 2.** Address health threats in Detroit residents posed by diseases induced by climate and environmental degradation.

**Initiatives.**

- a. Partner with the WSU One Health Program to support training, education and research on zoonotic diseases affecting Detroiters and Michigan residents.
- b. Partner with the WSU Center for Response to Urban Environmental Stressors (CURES) to foster engagement with communities for prevention of environmentally mediated infectious diseases.
- c. Partner with academic institutions in Ontario, Canada to foster partnership in transnational disease detection in Detroit and Windsor.

**Objective 3.** Develop collaborative training programs that foster development of health professionals with multidisciplinary expertise for infectious disease control.

**Initiatives.**

- a. Develop T32 training grant that develops clinician researchers who are expert in use of genomic testing, bioinformatics, epidemiology, and communication for emerging infectious disease control.
- b. Develop global health training and education program for long-term mentorship of investigators from low- and middle-income countries to support research and control for emerging and pandemic infectious diseases.
- c. WSU-Health System partnership to strengthen local and statewide capacity to control healthcare associated infections including detection and control of outbreaks due to emerging multidrug resistant pathogens.

## **Global Health Medical Student Concentration-Wayne State University School of Medicine**

Summary: January 26, 2022

Marcus Zervos, MD, Assistant Dean Global Affairs, Professor of Medicine

Ijeoma Opara, MD, Program Coordinator, Associate Professor, Department of Internal Medicine and Pediatrics

### **Introduction:**

Our primary mission is to maintain Wayne State University School of Medicine and Henry Ford Hospital as leaders nationally and internationally in Medical Education. Over the last several years, the interest and need for Global Health has become enormous. Formal training programs in Global Health in US medical schools are relatively few however but urgently needed. They are an important mechanism to recruit both talented students and faculty and enhance the standing of the University and Hospital in addition to providing support for our global community. There is no better example of need for training our next generation of physicians in the competencies of Global Health than our current experience with COVID-19. Global Health includes the need to support training programs that are transformative in underserved populations. The present proposed training and curriculum objective is designed to foster medical training and competencies to enhance medical education in Global Public Health, training and research. Currently, the efforts of WSU and HFH include work in underserved populations worldwide. Currently there are over 130 international programs in over 40 countries, that provide the support, foundation and opportunities for training of medical students.

### **General Description:**

The proposed Global Health medical student education concentration is a four-year longitudinal experience embedded in the already existing four-year medical school curriculum. An option of a graduate MPH or MBA degree will be provided to suitable candidates to be completed in an additional year of training. All university and medical school policies, expectations and graduation requirements are maintained. During the global health related training, students will be assigned to didactic lectures and international experiential rotations. Students will be assigned to a primary mentor for completion of a capstone project by completion of training. The program coordinator and faculty mentor will determine assignments. There will be up to 20 students (5 for the year 2022) assigned to this concentration per year. There will be a formal selection process to determine participants, which will be decided before start of medical school training. The program also will serve as a framework for bidirectional exchange of students and faculty internationally.

### **Objectives:**

The goals and objectives for medical students completing the Global Health medical student concentration will be the following:

1. Understand principles of global health including human rights, diversity, determinants of health, social justice, social capital, equity, building sustainable programs abroad.

## Appendix E

2. Become familiar with the essential principles of epidemiology that are applied in global and public health.
3. Understand differing health care delivery systems, supply management, implementation science, leadership training in global health, health system and program management.
4. Acquire knowledge in the most common and important competencies in Global Health including global burden of diseases, prevailing chronic and infectious diseases, priority setting, health care rationing, health care in low- and middle-income settings, health care structure and delivery strategies internationally, population resources and the environment and health.
5. Develop and refine important ethical and clinical skills as it pertains to Global Health including conducting socially and culturally sensitive interviews, performing diagnostic assessments, collecting and synthesizing patient information as applicable in resource limited settings.
6. Develop communication skills through formal presentations, advocacy, interaction with other staff and patients.
7. Demonstrate humanistic qualities including empathy, compassion and respect in all interactions with patients, their families and every member of the healthcare team.
8. Develop professional attitudes and behaviors by conveying a sense of teamwork and respect with other health care personnel, patients, and families.
9. Develop a sense of commitment, responsibility and accountability to patient care in underserved populations globally.
10. Understand the basics of how to plan, design, and evaluate the effectiveness of a community-based program to address a specific health problem or health disparity.
11. Students will acquire knowledge through required text, lectures, journal and online resources, reflective discussion.

### Training:

- The global health research concentration has been launched (along with 4 other concentrations) - <https://medstudentresearch.med.wayne.edu/globalsc>
- **M1-M2:** Mandatory graduation from Global & Urban Health Equity (GLUE) program with completion of capstone project, in accordance with LCME requirements <https://journalofethics.ama-assn.org/article/which-lcme-accreditation-expectations-support-quality-and-safety-global-health-immersion-experiences/2019-09>
  - Capstone; A multifaceted assignment that serves as a culminating academic and intellectual experience for students. The platforms for student capstone projects will be with existing programs in focused geographic areas including established programs. These programs are with public health entities, universities, health departments, universities, NGO's, ministries of health and community entities. Locations are in multiple countries worldwide including Latin America, Africa, Asia, Middle East and Western Pacific. Platforms and areas of program development include public health, health system leadership, maternal and reproductive health, communicable diseases, environmental health, chronic disease, health disparities, behavioral health, emergency services and bidirectional innovation.
- **M3-M4:** Clerkships and electives outside of the United States.
  - Students will do clinical rotations at WSU-affiliated hospitals, local public health departments, and with WSU and HFH faculty. There will be a total 1-3-month

## Appendix E

international experience required. The locations will be international sites including Schulich, for which we have established programs/MOU.

- Completion of global health emphasis project which includes submission of a proposal identifying a health care need in a region, participation in research or service delivery, identification of a faculty mentor, and presentation of related work at a Global Health Alliance meeting.

### Year 1-2:

See GLUE Appendix and Curriculum.

### Year 3

Students in the Global Health Concentration will do clerkships at WSU affiliated hospitals, with the exception of the Pediatrics rotation which will be international in Windsor, Ontario as part of Schulich School of Medicine. The clerkships related to the global health concentration will begin in 2024.

Clerkship	24-25	25-26	Notes
IM	6 weeks	12 weeks	
Surgery	6 weeks	12 weeks	
Pediatrics	6 weeks	6 weeks	Windsor, Ontario
ObGyn	6 weeks	6 weeks	
Neurology	3 weeks	4 weeks	
Psychiatry	3 weeks	4 weeks	
Family Medicine	3 weeks	4 weeks	
Ambulatory Medicine	3 months	Embedded in elective time	
Public Health	2 weeks	2 weeks	International

**Year 4:** Clinical Rotations, will be done at WSU affiliated hospitals. In addition to traditional one-month elective opportunities, a 1–3-month international experience will be required, at designated sites where we have established platforms, and MOU exists. All medical students in the Global Health Concentration will complete a final global health project at an international location. Optional participation in WSU Global Health Research course (GCRC) will be provided.

**Optional Year 5:** MBA or MPH, or elective in year 4 FPH 7120 Global Public Health. The selection process will include a formal interview process with a selection committee that includes the Assistant Dean for Global Affairs (SOM), Vice Dean for Medical Education (SOM), and faculty from Department of Public Health (SOM) for MPH candidates faculty from School of Business for MBA. The selection committee will be determined by respective deans. MPH candidates will have a demonstrated interest in careers in research, academics or public health. Those in the MBA will have demonstrated interest in careers in Global Health Leadership, health services administration, supply, innovation, and implementation science.

**Year 1-Year 2 - GLUE Curriculum – See attached appendix**

<b>Topic</b>
Introduction & Global Health
Social & Environmental Determinants of Health - CUGH #3
Global Burden of Disease - CUGH #1
Capacity Strengthening - CUGH #4
Introduction to Field Methods in Global Health & Program Management - #9
Foundations in Modeling and Biostatistics
Ethical Reasoning and Human Rights - CUGH #6
Population Engagement Skills and Safety
Social cultural and Political Awareness - CUGH #10
Capstone Review/NPH Week
Seminars in International Health
Introduction & Global/Local
Health Equity & Social Justice - CUGH #8
Globalization of Health & Health Care - CUGH #2
Strategic Analysis - CUGH #11
Professional Practice - CUGH #7
Collaboration, Partnering, & Communication - CUGH #5
Non-Communicable Diseases & Nutrition
Communicable Diseases: Neglected Tropical Diseases + Big 3
Population Engagement Skills and Safety
Capstone Review/NPH Week
Special Topic and Graduation

## Appendix E

### **Core Faculty:**

Marcus Zervos, MD, Assistant Dean, Global Affairs, Professor of Medicine

Jelena Verkler, MPH, Administrative Director for the Office of Global Affairs

Ijeoma Opara, MD, Associate professor, Department of Internal Medicine and Pediatrics, WSU

Kristiana Kaufmann, MD, Associate Professor, Department of Emergency Medicine, WSU

Julie Gleason-Comstock PhD , Assistant Professor, Department of Family Medicine, and Public Health Sciences, WSU

Chih Chuang, MD, Associate Professor, Departments of Internal Medicine, Pediatrics and Hospice and Palliative Medicine, WSU

Jeff Van Laere, MD, Emergency Medicine

Vijaya Kumar, MD, Associate Professor, Department of Emergency Medicine, WSU

Anita Shallal, MD, Clinical Assistant Professor, Division of Infectious Diseases, Henry Ford Hospital

Erica Herc, MD, Clinical Assistant Professor, Division of Infectious Diseases, Henry Ford Hospital

Katherine Reyes, MD, MPH, Global Affairs Office, WSU School of Medicine

Trini Matthew, MD, Global Affairs Office, WSU School of Medicine

Najibah Rehman, MD, MPH, Medical Director, Detroit Health Department

Tara Kimbason, MD MPH, Global Affairs Office, WSU School of Medicine

Paul Kilgore, MD, MPH, Associate Professor, Eugene Applebaum College of Pharmacy, WSU-HFH

Gina Maki, DO, Clinical Assistant Professor, Division of Infectious Diseases, Henry Ford Hospital

### **Needs:**

Course Director (0.2 FTE)

Full Time Course Coordinator



# **Global & Urban Health & Equity & Wayne State University Global Health Alliance Report: 2019-2021**

## **Table of Contents:**

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GLUE Faculty Accomplishments

Wayne State University World Health Student Organization

Wayne State University Global Health Research Center

GLUE Faculty & Staff

## **What is the Global & Urban Health & Equity Program?**

GLUE is the curriculum of the Wayne State University Global Health Alliance (WSUGHA), a multidisciplinary consortium of WSU faculty. The two-year seminar series is designed to offer learners the opportunity to gain comprehensive knowledge and skills surrounding global health by providing local and international educational opportunities that focus on the care of under-served and vulnerable populations. We also provide career and research mentorship in global and community health; promote scholarly activity in global health education, public health, research methods, and innovative ser-vice delivery; and competency-based education around health disparities and inequity.

## **What is the Wayne State University Global Health Alliance?**

WSUGHA is a multidisciplinary consortium of Wayne State University faculty who are passionate about global & urban health and committed to practicing ethical, strategic, evidence-based, compassionate, culturally competent service, research, and education. As it is no longer effective for global health professionals to operate within silos of specialties, WSUGHA serves to unify the various global health silos throughout the university to more efficiently and strategically leverage our collective resources to collaborate on innovative interdisciplinary approaches that will drive transformative solutions to better impact health outcomes and reduce global mortality and morbidity.

Our mission is aligned with Wayne State University (WSU), which is to "...create and advance knowledge, prepare a diverse student body to thrive, and positively impact local and global communities." We recognize that WSU's mission, urban location, and diverse student

composition places us in a unique position to exert innovative and visionary leadership in both international-global and local-global health and equity arenas.

### **Overview of the 2019-2020 Academic Year: Resilience**

There were challenges to overcome in GLUE's third year. Appropriately, the theme for GLUE this year was resilience. The Black Lives Matter (BLM) movement, strengthened by the murder of George Floyd, impacted faculty and students. COVID-19 is an ongoing threat to public health in the US and abroad, requiring faculty and students to adapt to ever-changing circumstances. Additionally, the pandemic, coupled with BLM, helped force considerations of inequalities in healthcare, law enforcement, and education to the forefront of our social and political discourse. The second GLUE cohort graduated amid these divisive events on April 30<sup>th</sup>, 2020.

### **Capstone Projects (2019-2020)**

The capstone projects offer asset-based community development in global and local contexts. These are mentor and group driven projects defined across four assignments, the concept paper, required in the first year of the program, followed by several assignments in the second year: a background, aims, literature review and methods paper, a capstone progress report, a capstone results paper, and a final presentation of the completed project.

#### **International**

##### **Paradada Pardadi Educational Society**

Summary: Pardada Pardadi is a well-established organization in rural Anoupshahar, Uttar Pradesh, India. The organization was created by a philanthropist in order to support equal education for girls in this rural area. Historically, girls were not able to attend school, leading to education and other disparities in the region. The all-girls school is well-established and now also hosts a clinic that serves not only the school but the local village and community.

Goals: To create a self-sustainable model, where selected members of the villages are trained to educate other members of their respective villages on pertinent health topics.

##### Phase 1: CDO-facilitated Workshops

- 1A: Diarrheal Diseases and Basic Life Support
- 1B: Asthma and Mosquito-borne illnesses

##### Phase 2: Train the Trainer

We need to select women who stand out as leaders in their communities to serve as healthcare ambassadors. We will then hold trainings for these women at PPES. Those women will then return to their villages and train others. Our unique model trains SHG members who are familiar with the culture and customs of the villages to be the primary educators. This will empower women to act as health educators in their villages.

Phase 1a demonstrated retention of topic information for students, but there was no demonstrated retention among village women. This may be due to a variance resulting from different women attending sessions 1a and 1b.

### **WHSO Pre-Travel Cultural Competency Curriculum**

Introduction: The World Health Student Organization (WHSO) sends medical students on medical relief trips every year. On our trips to Ecuador and Haiti, we felt unprepared, incompetent, and we were left wondering if we were making a positive impact during these trips. GLUE has worked with WHSO to alter the trip structure for the medical relief experiences overseas. The concept now is setting up temporary medical clinics - community assessment-based trips and/or global health education.

Goals: Develop a pre-trip curriculum that will: present basic ideas and ethics of global health, help students develop cultural competency prior to the trip and specifically for the country they will visit, collect data pre-trip and post-trip about the effect of the trip and pre-trip curriculum on the students, and use this data to refine and improve curriculum for future medical relief trips overseas.

Methods: There were two cohorts, Year One and Year two, so the methods varied depending on the cohort.

Year One: In collaboration with Dr. Laura Kline and undergraduate students from the Wayne State Department of Classical Languages, Literatures, and Cultures, the methods included: language sessions, cultural presentation, overview of healthcare system, and pre-trip and post-trip surveys. Language sessions covered medical terminology, basic sentence structure and verb tenses. Cultural presentation covered history, geography, healthcare system, political system, and common cultural practices.

Year Two: In collaboration with Child Family Health International (CFHI), the methods included: pre-trip survey, pre-trip curriculum provided by CFHI with group meetings to discuss a series of modules: Module 1 (Logistics), Module 2 (Global Health Ethics), Module 3 (Country Overview), Module 4 (Global Ambassadors for Patient Safety, or GAPS certificate), Module 5 (GlobeSmart, a cultural competency assessment), Module 6 (Intercultural Effectiveness Scale), Module 7 (Global Engagement Survey), and Module 8 (Short Reflection Prompt). In addition to the modules, the methods for Year Two also include group meetings to discuss the modules and add articles and activities based off researcher experience in GLUE.

### **Community Triage & Resources for Maternal Hemorrhage in the Marin District of Port-au-Prince, Haiti**

Introduction: Maternal hemorrhage is a leading cause of maternal mortality in Haiti despite being an entirely preventable cause of death. Few studies have been performed evaluating post-partum hemorrhage (PPH) in Haiti. The goal of this project is to evaluate the current situation surrounding PPH in the Marin district of Port-au-Prince and identify possible areas of intervention.

Methods: Health facilities in the Marin area were identified in collaboration with physicians from the Foyer St. Camille Hospital. These participants received a survey covering four aspects of PPH care: prevention, treatment, referral, and prenatal care. Survey items were primarily based on the 2012 WHO Recommendations for Treatment and Prevention of Postpartum Hemorrhage.

Results: Historically, delays in treatment have been the primary contributors to maternal death from hemorrhage, most commonly delays in 1) seeking treatment after home birth, 2) knowing where to seek emergency obstetric care, and 3) receiving care upon arriving at a facility. The data collected from this survey is expected to elucidate causes primarily for the third delay through comparisons to the WHO guidelines, between facilities, and between rural and urban centers. The results of this study will be available by the time of presentation.

Conclusion/Implications: This knowledge has potential to open the door to specific actions that can be taken in the Port-au-Prince community for reducing maternal deaths due to hemorrhage. If successful, these actions can then be extrapolated and adapted to fit other communities.

### Local

Metropolitan Detroit is a rich tapestry of racial, ethnic, national, socio-economic, sexual orientation, gender identity, physically limited/able diversity. It also has a long history of grassroots community activism and advocacy addressing social, economic, and health injury and injustice. Home to significant health disparities and inequities that reflect global realities, the region offers global health scholars and practitioners the unique opportunity for bi-directional service, learning, and research that provide benefit for local and international citizens.

#### **Samaritas: Homeless Population Needs Assessment at Samaritas Center**

Summary: The Samaritas Family Center is a partnership of Samaritas and Wayne County, offering emergency shelter for families experiencing homelessness (two-parent families, single mothers or fathers with children, and pregnant women). Despite the relative benefit conferred by emergency shelter, people living as part of homeless families still demonstrate higher rates of illness and more frequent utilization of emergency department and in-patient hospitalization. The prevalence of health conditions as well as patterns of healthcare utilization among residents at Samaritas Center has not been studied in the past.

It is necessary to investigate prevalence of illness, healthcare utilization patterns and access barriers in homeless individuals living at Samaritas Family Center.

Aims: The project aims to conduct a literature review to develop an overview of the unmet needs and the barriers for healthcare and needs among homelessness in the United States. Further, the project will quantify the prevalence of individual illnesses and diseases among residents at Samaritas Family Center. In addition, researchers will document locations where residents seek healthcare for themselves and their families. Having gathered the above data, the researchers will set out to describe the self-perceived factors and barriers that influenced utilization of healthcare including the location of healthcare utilization and describe self-identified strengths, challenges,

and areas for improvement in facility programs to address health self-management skills and health awareness.

Outcomes: Prevalence of identified existing diseases among residents at Samaritas Family Center will be confirmed. In addition, the frequency of the type of location used to access healthcare (ie. Established Primary Care Provider, Urgent Care/Walk-In Clinic, Emergency Department, Alternative Medicine Providers, EMS) will be verified. Further, researchers will establish the frequency of participant reported factors influencing choice of healthcare access location. Finally, the frequency of self-identified strengths, challenges, and areas for improvement in facility programs to address health self-management skills and health awareness will be substantiated.

Methods: Both qualitative interview and quantitative survey methods will be used. After obtaining the written consent forms, with the designed guideline, we will conduct 20-30 sessions of in-depth individual interviews among for the heads of homeless families who are living at Samaritas Family Center, who are willing to participate in the study, and who are aged 18 years and above. A self-administrated survey questionnaire will be delivered to all staff (N=14) who are working at Samaritas Family Center after having their consent.

## **Capstone Projects (2020-2021)**

### **International**

#### **Development of Pre-Travel Cultural Competency Curriculum for World Health Student Organization**

Introduction: The World Health Student Organization is a student organization composed of medical students whose mission is to gain rich medical and cultural experiences outside of their immediate communities through Short-Term Experiences in Global Health (STEGHs) for greater than a decade. Through informal post-travel student reflection, students and faculty have identified a need for a pre-travel curriculum that will place an emphasis on cultural competence to allow students to interact with the community in an ethical, impactful, and non-disruptive manner.

#### **Training the Trainers- Community Health Education Initiative**

##### **Background:**

The healthcare system in rural India is challenged by the vast needs of the rural population. The socioeconomically disadvantaged in India account for a substantial part of the global burden of disease, specifically accounting for 18% of global deaths and 20% of disability-adjusted life-years. In addition to inequalities in socioeconomic status, accessibility also plays a major role in an individual's ability to receive quality health care. Limits to accessibility include high out-of-pocket health expenditures and physical barriers to health care services. With a physician density of only 0.73 physicians per 1000 people, access to quality health care is severely limited,

particularly in rural areas. The hospital bed density in rural areas is only 0.7 beds per 1000 people, significantly less than the worldwide average of almost three beds per 1000 individuals. This lack of accessibility results in delayed treatment, worse prognosis, and increased patient suffering.

In addition to the lack of general rural healthcare, gender inequality in India is also an issue that affects a variety of aspects including career development, educational attainment, and health disorders. This is especially exemplified in women living in rural areas. Research has shown women at a disadvantage to access to proper care. While women are seen as the primary caregivers of their household, they are limited by mobility. It is increasingly difficult for them to leave their homes and find proper healthcare when the responsibilities of the home and children come first. According to the Global Gender Gap Report released by the World Economic Forum (WEF) in 2011, India was ranked 113 on the Gender Gap Index (GGI) among 135 countries polled.

One effort to combat social disadvantage experienced by rural women is the Pardada Pardadi Education Society (PPES), located in Anupshahr in the northern Indian state of Uttar Pradesh. PPES operates a free, high quality K-12 school for girls from the surrounding villages. Health and health education for students, as well as their home communities is an identified pillar of success by PPES, leading to the opening of Prana Health Clinic at the PPES school campus, accessible to students, as well as any individual in the surrounding villages. A logical extension of healthcare provided by the Prana health clinic is community health programming provided by trained Community Development Officers from PPES. This is done as part of the Community Health Education Initiative, a partnership between Wayne State University (WSU) and PPES.

Our Community Health Education Initiative (CHEI) in Bulandshahr district of Uttar Pradesh, India works with women to attain health education and in turn utilize this knowledge to not only better the health needs in their community, but also to perpetuate the cycle of healthcare education with community members. The primary aim was to create a self-sustained health education model with continuous feedback and one that lays a foundation for women to take on leadership roles.

### Local

#### **Structuring the FreedomCares Initiative Partnership to Improve Refugee Health Literacy**

Development of the FreedomCares Initiative started in 2018 and continues to be reworked. Our goal is to have an established framework trialed for this project by mid-2021.

#### Importance:

The FreedomCares Initiative (FCI) is a joint program between the Wayne State University Global Health Alliance and Freedom House Detroit (FHD), with the goal of facilitating health education and improved healthcare access to refugees and asylum-seekers residing at FHD. As many of the residents are victims of war and torture, are disallowed from working or earning and income, and ineligible for US healthcare due to their status, many of their mental and physical

wellness needs are going unaddressed. Members of the Wayne State Global & Urban health & Equity (GLUE) program lead the efforts of FCI and work closely with the residents and staff of FHD to meet these diverse needs and address complex challenges residents face.

Health education and advocacy of refugees and asylum seekers has been studied by groups across the globe. According to an NIH study in Malaysia, key challenges faced by migrant populations (mostly SE Asia) include cultural and language discordance, which has increased the need for increased cultural competence and language support.<sup>1</sup> WHO has provided technical guidance to help promote refugee and migrant health, providing direction to member states to make evidence-based responses to public health challenges of these communities, stressing that different migrant groups face diverse health care needs and cannot be generalized.<sup>2</sup>

Additionally, the important role of psychiatrists and allied health professionals has been studied in Australia, raising concerns regarding refugee mental health, resulting in policy change.<sup>3</sup> These studies stress health education in the refugee and asylum-seeking populations, and thus the importance of the work done through the FCI.

### **Samaritas: Homeless Population Health Needs Assessment**

Summary: Samaritas Family Center in Westland is a partnership of Samaritas and Wayne County, offering emergency shelter for homeless families in southeast Michigan. Families can live in the center for up to three months. In addition to housing, the following services are offered: three balanced meals and a snack daily, on-site medical clinic, assistance in finding permanent housing, job counseling and placement, education/GED resources, and licensed childcare for preschoolers. GLUE students worked with Samaritas leadership to develop a survey to better understand the health care needs and health care utilization of homeless families residing at the center. The information will provide an understanding of the residents' health care needs and serve as the basis for ongoing health education workshops.

### **First Aid First**

#### Aims:

The 2 aims of our project focus on designing and implementing quality improvement measures for FAF that aligns with their current goals of expansion and ease of education. Thereby our capstone project aims to achieve the following: 1) Create a formal program for community outreach which we will then implement to generate community partners that can present a FAF education to the populations that they service, and 2) Collaboration with WSUSOM FAF student in assisting in their development of an online FAF instructional repository to remove the barriers of in person training and reach a wider audience. With the present restrictions for social gatherings put in place due to COVID-19, our initial plans for FAF to manually implement changes with regular appraisal is not viable due to the inability to present information through practical means. As such, our main strategy for quality improvement has shifted towards community partnership building and capacity strengthening to ensure a self-sustainable FAF program that is able to empower people of all ages and backgrounds with functional knowledge to respond during unforeseen medical emergencies. A targeted list of community organizations whom we can partner with has been curated, including SAY Detroit, Detroit Life is Valuable

Every day, Detroit Will Breathe, Boll Center YMCA and affiliates, and the various WSU student-run free clinics at WSU with underinsured/disadvantaged patient populations (LGBTQPIM, SRFC and Cass Clinic). We will begin the initial steps of our project by getting in touch with these organizations to enroll a broader audience in our community who can largely benefit from remote learning of first aid skills taught in the FAF program.

## COVID-19 Pandemic's Impact on GLUE Faculty & Students

COVID-19 required Wayne State University to move all classes Online. Canvas is already a cornerstone of the GLUE experience, but due to COVID-19 we were not able to have in-person classes in April or May. That also meant an Online graduation (see the image above). We adapted to the change rapidly and effectively. Further, we used the state-wide lock-down as an opportunity to discuss how healthcare workers find resilience during the pandemic:

"The issue of healthcare disparities, racism and access to care are a painful reality right in front of us as we are all confronted by the horrors of this pandemic and the weaknesses of our healthcare system, government leadership and media bias...Despite those challenges, I tenaciously and stubbornly have hope and I find it in gratitude." - **Michelle Brock**

"Finding gratitude in the small and large efforts of others is a sanctuary." - **Katanya Alaga**

"At the end of the day, prior to getting in bed when all your thoughts of the day are in your head, taking the time out to thank God and pray for the health for everyone you saw that day, every family suffering from loss and devastation, the safety and health of your own family, you realize brings you closer to believing and closer to those who you love." - **Ronny Hadid**

"Throughout these experiences, my family has been my greatest source of resilience but also a source for concern for fear of spreading the virus. Nonetheless, these people give me the drive to go out every day and strive to improve." - **Arif Ali**

"I found strength in the innovative ways people were sharing knowledge and providing comfort to one another." - **Joud Jarrah**

We went to a fully online Zoom platform this year. Our students continue to work primarily using Canvas through WSU as well. We have found the students, faculty, and guest speakers have adapted well to Zoom and we plan to make online presentations a regular part of our class going forward!

Both our international and local sites have been 'shut down' to volunteers during the pandemic. Our mentors, students, and community partners have worked together to bring our partnerships to virtual spaces and continue our collaborations.

The inaugural GLUE movie and book clubs met in 2020. The first session was a screening and discussion of the movie *The 13<sup>th</sup>*, which addresses the history of racism, from slavery to mass



incarceration, in the United States. The book club featured a virtual discussion of *What the Eyes Don't See* by Dr. Hanna Mona Attisha. We look forward to continuing our movie and book clubs in the future.

### **GLUE Graduating Class (2020)**

Evi Abada (DMC, Resident) Arif Ali (Resident) Louise Colo (Medical Student) Mara Darian (MPH) Amanda Dooley (Medical Student) Fatima Eid (MPH) Emily Marlow (Medical Student) Anneliese Petersen (Medical Student) Bailey Ray (Medical Student) Liying Zhang (WSU, Researcher/Faculty)

Residents: 2, Medical Students: 5, MPH: 2, Research/Faculty: 1

### **GLUE Graduating Class (2021)**

Katanya Alaga (Medical Student) Rashid Alhusain (Resident) Naga Vija Lakshmi Divya Boorle (Researcher) Michelle Brock (DMC, Staff) Raymond Chung (Medical Student) Roberto Hurtado Fiel (DMC, Resident) Chontay Glenn (MPH) Ronny Hadid (DMC), Aneesh Hehr (Medical Student) H. Yavuz Ince (Resident) Joud Jarrah (DMC, Fellow) Sonal Joshi (pre-med, WSU) Grace Mahasi (MPH) Nitya Manney (Resident) Shravan Morisetty (Medical Student) Heba Osman (Resident) Aishwarya Panneerselvam (Medical Student) Dhruvil Patel (Medical Student) Michelle Rivera (DMC, Faculty) Marjilla Seddiq (Children's Hospital of MI, Fellow) Sharmila Segar (Resident) Asmita Shukla (WSU, Researcher) Alankrita Taneja (Resident)

Residents: 7, Medical Students: 6, MPH: 2, Research/Faculty: 3, Fellow: 2, Pre-Med: 1, Other:1

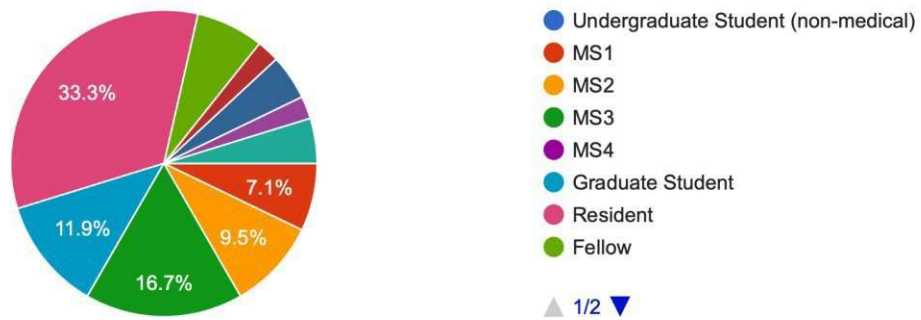
## GLUE Current Year Two Graduating Class (2022)

Crystal Ajja (Resident), Brooke Bearden (PA, Graduate Student), Nora Berens (Fellow – EM), Lydia Bourke (Research – Post-Grad), Tommy Bui (Medical Student), Colin Colter (PA), Miranda Doepker (Medical Student), Amanda Dwyer, Marjorie Gayanilo (Faculty/Staff), Macda Gerard (Medical Student), Damia Gonullu (Resident), Skyler Jackson (PA), Joyce Kate (Resident), Andrew Leamon (Fellow), Erin McGlynn (Resident), Divya Mukhija (Researcher), Vaibhuv Nangia (Resident), Nataliya Sachovska (Resident), Priya Sankaran (Medical Student), Sagar Shah (Resident), Destiny Stroman (Medical Student), Maryam Syed (Researcher), Stephanie Taing (Resident), Neha Venkatesh (Medical Student), Emily Wynia (Resident)

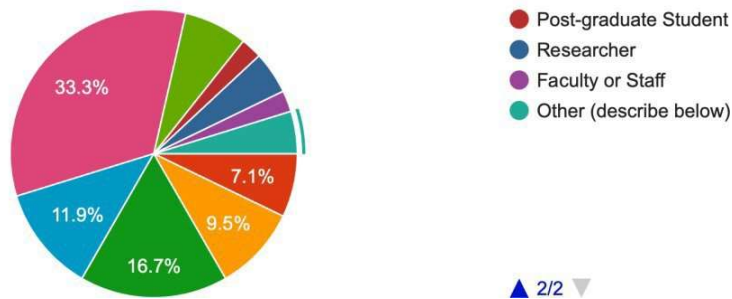
Residents: 8, Medical Students: 6, Physician Assistants: 3, Research/Faculty: 5, Fellow: 2

**The following graphics breakdown the applicants to the GLUE program for 2020:**

42 responses

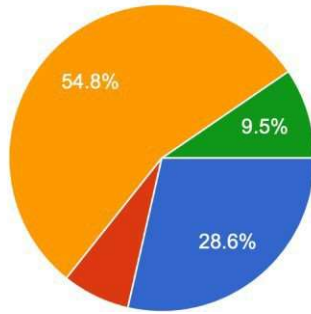


42 responses



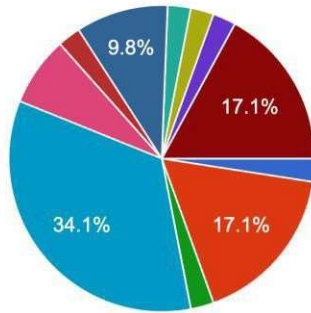
Appendix E

42 responses



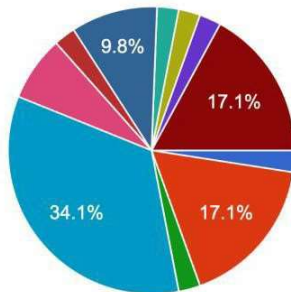
- Detroit Medical Center
- Henry Ford Health System
- Wayne State University
- Other (describe below)

41 responses



- Anesthesiology
  - Emergency Medicine
  - Engineering
  - Internal Medicine or Sub-specialty
  - Law
  - Medical
  - Med-Peds
  - Nursing
- ▲ 1/2 ▼

41 responses



- Ob/Gyn
  - Pediatrics or Sub-specialty
  - Pharmacy
  - Public Health
  - Research
  - Social Work
  - Surgery or Sub-specialty
  - Other (describe below)
- ▲ 2/2 ▼

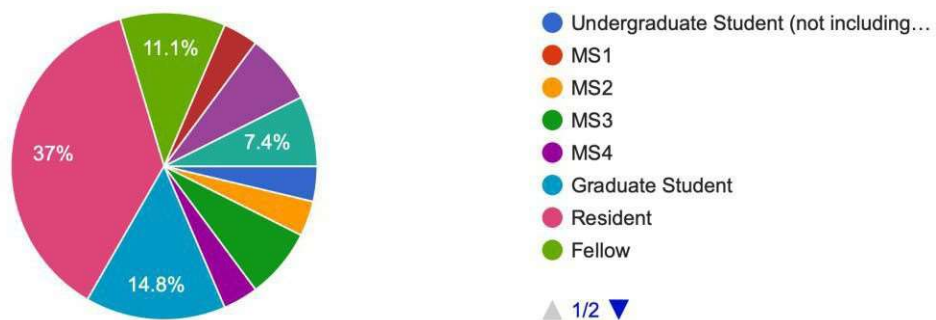
## GLUE Current Year One Graduating Class (2023)

Mohammed Ibrahim (Clinical & Research Assistant) Yasmeen Mann (Resident), Lache Tate (Graduate Student), Sarah Moore (Faculty/Staff), Tahlianna Almonte (Resident), Sarah Philbrick (Resident), Aida-Kai Anderson (Post-Graduate Student), Arichena Manmatharayan (Resident), Rajiv Varandani (Resident), Haria Henry (Resident), Alissa Moody (Resident), Matthew Meranda (Resident), Charmayne Cooley (Resident), Jennifer Chalam (Fellow), Jahanavi Ramakrishna (Resident), Camila Ospina Jimenez (Fellow), Navina Birk (Fellow), Meghna Shukla (Graduate Student), Capricia Bell (Medical Student), Amita Hinge (Medical Student), Kassandra Solsrud (Medical Student)

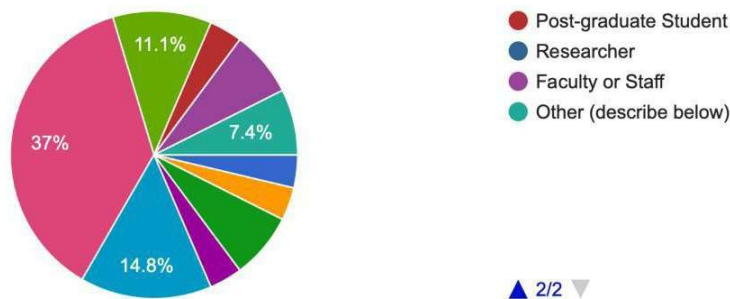
Residents: 10, Medical Students: 3, Research/Faculty: 3, Graduate Student: 2, Fellow: 3

**The following graphics breakdown the applicants to the GLUE program in 2021:**

Educational Status  
27 responses



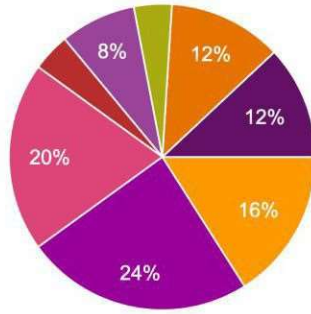
Educational Status  
27 responses



Appendix E

Department/School/Employer

25 responses

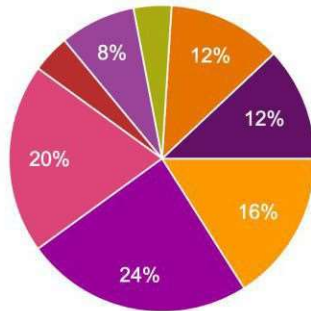


- Allied Health
- Anesthesiology
- Emergency Medicine
- Engineering
- Internal Medicine or Sub-specialty
- Law
- Medical (School of Medicine)
- Med-Peds

▲ 1/3 ▼

Department/School/Employer

25 responses

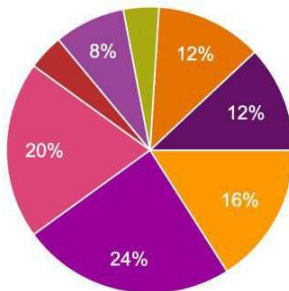


- Nursing
- Ob/Gyn
- Pediatrics or Sub-specialty
- Pharmacy
- Public Health
- Research
- Social Work
- Surgery or Sub-specialty

▲ 2/3 ▼

Department/School/Employer

25 responses



- Other (describe below)

▲ 3/3 ▼

## GLUE Sessions Sept 2019-April 2020

### Sept 19: Social & Environmental Determinants of Health – CUGH Domain #3

Core Faculty – Dr. Ijeoma Nnodim Opara

#### Overview

Demonstrate curiosity about cultural systems within communities and recognize how culture interacts with environment, economy, and politics to directly affect health. Demonstrate basic understanding of major social and cultural determinants of health and their effects on access to and quality of emergency care and other health services.

#### Objectives

Describe how cultural context influences perceptions of health and disease (a.g. cultural beliefs about basis of and remedies for disease, etc). Recognizes how bias impacts the way patients think about health and disease. Demonstrate understanding of the major causes of morbidity and mortality between and within countries and identifies contributing social and environmental factors.

### October 17: Global Burden of Disease – CUGH Domain #1

Core Faculty – Dr. Vijaya Arun Kumar

#### Overview/Objectives

Describe the major causes of morbidity and mortality around the world, and how the risk of disease varies with regions.

Describe major public health efforts to reduce disparities in global health (such as Sustainable Development Goals (SDGs) and Global Fund to Fight AIDS, TB, and Malaria).

Validate the health status of populations using available data (e.g., public health surveillance data, vital statistics, registries, surveys, electronic health records and health plan claims data).

### November 14: Capacity Strengthening – CUGH #4

Core Faculty – Dr. Kristiana Kaufmann

#### Overview/Objectives

Collaborate with a host or partner organization to assess the organization's operational capacity: purpose, governance (both in terms of policies as well as human resource management), technology, and finances.

Co-create strategies with the community to strengthen community capabilities and contribute to reduction in health disparities and improvement of community health.

Integrate community assets and resources to improve the health of individuals and populations.

## **December 12: Program Management – CUGH Domain #9**

Core Faculty – Dr. Amy Cortis

Featured Speakers – Barb Fils, Parent Action for Healthy Kids, Bill McNeece, Vice President of Haiti Outreach Mission, Valerie McNeece of Haiti Outreach Mission, and Dominique Monde-Matthews, Director/Founder of Haiti Outreach Mission.

Overview/Objectives

Plan, implement and evaluate an evidence-based program.

Apply project management techniques throughout program planning, implementation, and evaluation.

## **January 16: Ethical Reasoning – CUGH Domain #6**

Core Faculty – Dr. Jamey Snell

Overview/Objectives

Demonstrate an understanding of and an ability to resolve common ethical issues and challenges that arise in working within diverse economic, political, and cultural contexts as well as working with vulnerable populations and in low resource settings to address global health issues.

Demonstrate an awareness of local and national codes of ethics relevant to one’s working environment.

Apply the fundamental principles of international standards for the protection of human subjects in diverse cultural settings.

## **February 13: Population Engagement Skills & Safety**

Core Faculty – Dr. Jeffrey Van Laere & Professor Laura Kline

Featured Speaker – Parada Jordan, Director of Community Outreach, Clinical Research Services Center, WSU

Identify local resources for pre-travel vaccinations and medications.

Better prepare for promotion and maintenance of health while traveling.

Understand important cultural aspects of community involvement/research.

Understand key deadlines for travel.

## **March 12: Sociocultural & Political Awareness – CUGH Domain #10**

Core Faculty – Dr. Jeffrey Van Laere

Overview/Objectives

Describe the current burden of disease of “The Big Three.”

## Appendix E

Give examples of current strategies for disease control.

Understand how these diseases are transmitted, diagnosed, and treated.

Discuss prevention strategies and their potential effectiveness and limitations at different stages of an epidemic.

### **April 30: Special Topic & Graduation**

Core Faculty – Dr. Ijeoma Nnodim Opara

Featured Speaker – Rabbi “G” Rabbi Elimekeh Goldberg, Founder of Kids Kicking Cancer

## **GLUE Sessions Sept 2020-April 2021**

### **Sept 24: Health Equity & Social Justice – CUGH Domain #8**

Core Faculty – Dr. Amy Cortis,

Featured Speakers – Dr. Carlos Faerron Guzman, Director for Interamerican Center for Global Health & Carolina Balanos, Associate Director Center for Interamerican Center for Global Health, Elder Leslie Mathews of Michigan United

#### Overview

Health equity and social justice is the framework for analyzing strategies to address health disparities across socially, demographically, or geographically defined populations.

#### Objectives

Apply social justice and human rights principles in addressing local and global health problems

Implement strategies to engage marginalized and vulnerable populations in many decisions that affect their health and well-being

Better understand the impact of structural inequalities in the health-care setting

Reflect on the health equity and social justice issues in your local and global communities and your role in engaging in social change.



## **October 15<sup>th</sup>: Globalization of Health & Healthcare – CUGH Domain #2**

Core Faculty – Dr. Jamey Snell

Featured Speakers – Nailah Brown, Case Manager, FreedomLives, Freedom House and Dr. Zeta Mutabazi.

### Overview:

Focuses on understanding how globalization affects health, health systems, and the delivery of healthcare.

### Objectives:

- Understand the fundamental role healthcare systems play in society and differences between ideal goals versus reality in universal health coverage
- Become familiar with various metrics used to measure the quality of and track improvement of a healthcare system
- Describe different national models or health systems for provision of healthcare and their respective effects on health quality and healthcare delivery
- Describe general trends and influences in the global availability and movement of health care workers

## **December 3<sup>rd</sup>: Professional Practice – CUGH Domain #7**

Core Faculty: Dr. Ijeoma Nnodim Opara

Featured Speakers: Charles Nwobu, MBBS, MPH, Children’s Family Health International (Ghana), Tamara D. Otey, RN, PhD, & Adrian Holloway, MD.

### Objectives

Demonstrate integrity, regard, and respect for others in all aspects of professional practice  
Articulate barriers to health and healthcare in low-resource settings locally and internationally  
Demonstrate the ability to adapt clinical or discipline-specific skills and practice in a resource-constrained setting

## **January 14<sup>th</sup>: Collaboration, Partnering, & Communication – CUGH Domain # 5**

Core Faculty – Dr. Kristiana Kaufmann

### Objective:

“Collaborating and partnering is the ability to select, recruit, and work with a diverse range of global health stakeholders to advance research, policy, and practice goals, and to foster open dialogue and effective communications with partners and within a team.”

## February 11<sup>th</sup>: Communicable Diseases, Neglected Tropical Diseases + The Big 3

Core Faculty – Dr. Jeffrey Van Laere

### Objectives:

Identify the origin of “The Big Three”

Be capable of identifying characteristics and definition of “Neglected Tropical Disease”

Identify unifying characteristics of the neglected tropical diseases

Describe the progress made in communicable disease management and prevention

## White Coats for Black Lives

Occurring during the COVID-19 pandemic, the murder of George Floyd by police officers in Minneapolis on May 25 strengthened the protest movement against systemic racism in law enforcement. Among those participating in White Coats for Black Lives protests was GLUE co-director Dr. Ijeoma Nnodim Opara, who was quoted in the *Detroit Free Press* as stating, "We are here today because we understand...that what happened to Mr. George Floyd when he was brutally murdered by a white Minneapolis police officer on May 25, 2020 was not a random occurrence in a vacuum." She was part of the hundreds of healthcare workers at the Detroit Medical Center who took a knee and observed 8 minutes and 46 seconds of silence in memory of Floyd's murder on June 6th.

This movement was further strengthened by the exposure of healthcare inequalities by the ongoing pandemic, which has disproportionately impacted minority communities. White Coats for Black Lives shows healthcare workers' support for Black Lives Matter by highlighting racial injustice within law enforcement and healthcare. Lindsay Moore at *mlive.com* quoted Michigan's chief medical executive and chief deputy director for health with the Michigan Department of Health and Human Services, Dr. Joneigh S. Khaldun as stating, "I've seen the disproportionate impact that racism has had for people of color...because of differences in unequal access to adequate housing, health care, education, and jobs. This directly contributes to health disparities."

The CUGH #8 class on “Health Equity and Social Justice” was well-received by faculty, students, and guests. The session was timely and allowed for productive discussions of contemporary events.

The Global Health Alliance also supported local WSU art student Christina Krysiak who designed a “Say Their Name” yard sign featuring the names of African Americans killed by police. Her creation was highlighted by several news outlets. Krysiak raised and donated more than \$6,000 to Black Lives Matter through the sale of her yard sign.

GHA also hosted a Microaggressions/Implicit Bias workshop for the Department of Emergency Medicine residents and faculty, faculty of the Dept of Family Medicine, and the Detroit Medical Center Graduate Medical Education.

## Wayne State University Global Health Research Center

The WSU Global Health Research Center was created to help overcome social, intellectual, and ethical barriers. We place a strong emphasis on building local global health research capacity, promoting local innovation, and prioritizing research training for community professionals. Our vision is to foster quality research by creating communities across the globe to train leaders, establish partnerships and collaborate towards global health solutions – solutions that transcend education, funding streams, healthcare, languages, and borders.

The future of this collaborative is to provide quality career long mentorship and connectivity within an extensive network for professionals around the world. Through this framework, our goal is to ensure a generation of successful and impactful novel global health research on a worldwide platform for even the most vulnerable populations.

GLUE core faculty member Dr. Vijaya Arun Kumar is the co-director of the GHRC and Dr. Ijeoma Nnodim Opara, GLUE co-director, and Dr. Amy Cortis, GLUE core faculty member, both contributed to the GHRC Online Summer Workshop. Dr. Nnodim Opara focused on Asset-based Community Development and Dr. Cortis spoke on “Adolescent Mental Health: Global Challenges + Initiatives.”

## GLUE Faculty Accomplishments

On Sept 30th, 2020 GHA presented our WSU SOM Global Health initiatives at the Midwest Universities for Global Health 7th annual collective meeting of Midwestern academic institutions that are advancing global health community engagement, education, and research. Questions addressed by the 35 academic institutions included:

1. How is global health now increasingly recognized?
2. How did your global health educational and research activities change?
3. How have you leveraged its emphasis amongst your leadership?

Drs. Kaufmann and Opara attended the CUGH Faculty Development workshop with Child Family Health International at Costa Rica Jan 4-11th. The course was developed and led by leaders in global health education. The session included didactics on global health program development and interprofessional networking and program enhancing.

Dr. Kaufmann published an article:

K. Kaufmann. “Addressing Racism Awareness within your Physician Group: A Case Study.” *SAEM Pulse* Nov-Dec 2020

## **Funding and Support**

The WSU SOM Office of Global Affairs has issued scholarships for medical students to attend a virtual global health elective through Child Family Health International. The office will also support seven GLUE students to attend and present at the Consortium of Universities for Global Health Virtual Conference this March 12-14th, 2021. This year, the office was also able to support our GLUE coordinator, Kent Anderson, who manages our GLUE CANVAS classrooms.

## **Wayne State University World Health Student Organization**

The WSU GHA has worked with the WSU School of Medicine World Health Student Organization (WHSO) to revamp their experiential learning opportunities to align more with the principles of the Global Health Alliance. Working with Dr. Chih Chuang, faculty advisor, and the Child Family Health International (CFHI) NGO, we were able to design a new learning experience for the WSU WHSO pre-clinical students. Unfortunately, due to COVID, these initial plans were cancelled. However, due to the dedication of the students and the ingenuity and adaptability of CFHI, we have been able to commit to virtual global health experiences for WHSO students in 2021. We hope that this new partnership with CFHI will prove to be a strong step forward for global health experiential learning for the WSU WHSO.

As COVID prevented our scheduled international electives, students and GHA faculty adapted by creating a new Global Health Speakers webinar series. The purpose of this series was to bring global health leaders from across the region, country, and world to speak of their experiences with WSU WHSO students. We have hosted four such virtual lectures this year. The first lecture was by Dr. Kristiana Kaufmann of WSU GHA speaking on Sustainability of Global Health with examples from Lao PDR. Our second speaker was Dr. Robert Harris Gilman MD, DMD, whose topic was “Partnership Building in Global Health,” the third lecture was given by Dr. Jessica Evert, MD, Executive Director of CFHI, who spoke on “Ethical Challenges and Pre-Engagement Preparation,” and the fourth speaker was Dr. Stanislaw P. Stawicki, MD, MBA, FACS, FAIM, Chair of the Department of Research of Innovation, St. Luke’s University Health Network, Bethlehem, Pennsylvania, and Professor of Surgery at Temple University School of Medicine, who concluded the series with a lecture on “Pandemic Preparation.”

## GLUE Core Faculty & Staff

### **Kristiana Kaufmann, MD, MPH**

Co-Director

GLUE Core Faculty

Capstone Faculty Mentor: First Aid First, Community Health Training, Detroit

Dr. Kristiana Kaufmann is director of the Global Health Section and the International EM Fellowship at the WSU Department of Emergency medicine. She is also the co-director of the WSU Global Health Alliance and its Global and Urban Health Equity Scholars Program. Dr. Kaufmann is the ACEP Ambassador to Lao PDR through her long-standing work with Health Frontiers, including development and director of the new Lao EM residency training program. She created the Urban Clinical First Encounters first aid training for incoming students in the WSU School of medicine and is faculty adviser for the First Aid First WSU student organization aimed at teaching first aid in the Detroit community. Dr. Kaufmann is also the Eastern Michigan Region Medical Director for the National Ski Patrol and actively patrols as a Senior patroller at Alpine Valley Ski Patrol in White Lake, Michigan.

### **Ijeoma Nnodim Opara, MD**

Co-Director

GLUE Core Faculty

Capstone Faculty Mentor: Freedom Cares Initiative, Refugee Health, Freedom House Detroit

Dr. Nnodim received her medical degree from Wayne State University School of Medicine (WSUSOM) and is a graduate of Detroit Medical Center (DMC)/WSUSOM Internal Medicine-Pediatrics combined residency program, after which she served as Chief Medical Resident. Currently, she is a double-board certified Assistant Professor of Internal Medicine and Pediatrics at WSUSOM, Associate Program Director of the Internal Medicine-Pediatrics residency and attending physician with Wayne State University Physician Group.

She provides clinical care to a chiefly underserved population, supervises resident clinics, and teaches inpatient and ambulatory medicine. She mentors several residents and medical students in wellness, work-life balance, academic, and career development. Her areas of academic interests are in global health, medical education, and physician wellness. She imbues every endeavor with her philosophy of patient-centered, evidence-based, high value, compassionate care and prioritizes attention to social determinants of health, disparities, and equity as part of a comprehensive approach to patients.

She has a long history of leadership in service to the African immigrant and African American communities and co-founded Africans in Medicine, whose mission is to unite African medical professionals to further the health interests of Africans living on the continent and in the Diaspora. Winner of the 2017 “Most Engaged Physician” award given by the Detroit Medical

Center, she was recognized for her excellent track record in community service, collaboration with colleagues, and advocacy. She received the “Faculty of the Year” award, given by the internal medicine-pediatrics residents to the faculty member who best embodies the aspects of great clinician educator, including mentorship, teaching, and humanism in medicine.

**Amy Cortis, MD**

GLUE Core Faculty

Capstone Faculty Mentor: Samaritas

Dr. Amy Cortis received her medical degree from Wayne State University School of Medicine and completed her pediatrics residency and pediatric emergency medicine fellowship training at Children's Hospital of Michigan. She is currently an assistant professor in the departments of pediatrics and emergency medicine at WSU. Dr. Cortis's interest in global health started during medical school when she had the opportunity to spend six weeks in Hyderabad and Mysore, India through the Wayne State University School of Medicine World Health Student Organization. During residency, Dr. Cortis completed a Pediatric Global Health Certificate which was a joint program sponsored by WSU and Children's Hospital of Michigan and involved an international exchange program in China. Dr. Cortis is passionate about the health of children and their families globally and locally. In addition, she has traveled to Haiti, Panama, and Nicaragua to mentor WSU SOM students.

**Vijaya Arun Kumar, MD, MPH, DPH Board of Directors**

GLUE Core Faculty

Capstone Faculty Mentor: Child Health Education Initiative in India

Having completed his medical school and diploma in public health from India, Dr. Kumar worked in a rural health setting in India for nearly 2 years. It was during this time that he developed an interest in working for and among the rural population. In the US, he went on to complete a family medicine residency followed by a clinical research, emergency medicine fellowship and a master's in public health. He has developed a focus in cardiovascular research in emergency medicine, has authored numerous publications and is the principal investigator for more than 10 clinical studies. Dr. Kumar is a member of the Institutional Review Board at Wayne State University (WSU), on the editorial board of Michigan Journal of Public Health and a manuscript reviewer for Annals of Emergency Medicine. His role in improving research and rural health in India has led him to have multiple leadership positions including the director of research at “Prana Health Center” and a board member of “Saviors Without Borders”. His global health interests include development of clinical research in resource limited settings, upliftment of women health in rural India and improvement of emergency medicine in low and middle-income countries. He is presently the associate director of the International Emergency Medicine Fellowship at WSU and the chair of the research committee at the Global Health Alliance- WSU.

**Jamey Snell, MD**

GLUE Core Faculty

Capstone Faculty Mentor: Freedom Cares Initiative, Freedom House Detroit

Dr. Jamey Snell is a Louisiana native and a graduate of Florida A&M University and Harvard Medical School. An interest in global health was prompted by professor and global health leader, Dr. Paul Farmer, who emphasized the social roots of health and disease, and opened opportunities to volunteer with the World Health Organization and Ugandan Ministry of Health for the roll-out of a national HIV treatment plan, studying international academic partnerships at Bugando University in Tanzania, and studying pediatric peer support groups with chronic diseases in rural Costa Rica. While in anesthesia residency at New York University, he served as chief resident and was awarded a one-month teaching fellowship by the Society for Education in Anesthesia to serve as anesthesia faculty at Addis Abba University in Ethiopia. Following residency, he pursued a two-year fellowship program in pediatric anesthesia and global health at Boston Children’s Hospital. This provided access to participate in a ground-breaking model for international collaboration in medical education and health-system scale up through the “Human Resources for Health” program in Rwanda. As part of the anesthesia teaching faculty at the University of Rwanda for half a year, his experience from the other side of the global health exchange further galvanized his belief that the traditional models of medical and surgical missions carry the potential for unforeseen consequences and collateral damage to the very people they seek to serve. Most recently he has relocated to Detroit to follow his wife Dr. Brittany Carter-Snell back to her hometown and has joined the anesthesia department at the Children’s Hospital of Michigan. He now serves as a staff pediatric anesthesiologist and the Director of Sedation Services at CHM and at the WSU School of Medicine.

**Jeffrey Van Laere, MD**

GLUE Core Faculty, Capstone Mentor: Pre-Travel Cultural Competency, Community Triage & Resources for Maternal Hemorrhage in the Marin District of Port-au-Prince, Haiti

Dr. Jeffrey Van Laere is an Emergency Physician who works with the Global Health Alliance to improve access to acute healthcare delivery globally. His current interests include community health indicator surveillance, methods for improving community triage and early access to care, and capacity development for evidence-based decision making. He enjoys spending time with his wife, new baby, and two dogs.

**Kent Anderson, MA**

GLUE Curriculum Coordinator & Classroom Manager

Kent Anderson is responsible for GLUE’s online classrooms on Wayne State University’s Canvas platform and assists in the development of the GLUE curriculum. As an instructor, he has taught a variety of classes in both online and in physical classrooms for over a decade. His research interests include plague narratives, the cultural history of epidemics and pandemics, and intersections of fear, politics, and disease in history and popular culture.

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February 14, 2022

Wayne State School of Medicine, Global Health  
Annual Report 2022

On behalf of the School of Medicine at Wayne State University, I am pleased to present a summary of our international activities. The information includes an overview, review of international collaborations, prior year's achievements, an operational work plan, and performance plan. We are committed to maintaining our recognized excellence in these efforts.

Our primary mission is to increase Wayne State University School of Medicine standing as a leader nationally and internationally as a leader in Global Health, to foster international programs with a focus on research and training that enhance public health and are sustainable in marginalized patient populations and to create a coordinated infrastructure to support international research activities.

Our office is aligning resources to enhance programs in our focused areas of strength including maternal and child health, communicable disease, environment and health, emergency management, and bidirectional training and research in global health, by partnering with colleagues from within and outside the institution. We are viewing global health challenges as opportunities for the continued pursuit of excellence.

I am excited about the future of the Office of Global Affairs within the School of Medicine at Wayne State University School of Medicine and plans for our effort to remain a leader in providing the highest caliber of work now and for the future.

Marcus J. Zervos, M.D.  
Assistant Dean, Global Affairs  
Professor of Medicine  
Wayne State University School of Medicine



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### Overview

Wayne State University has almost 250 international programs with overseas institutions and of the agreements on file with the Office of International Programs (OIP), approximately 100 of them are currently active. There are multiple training electives for students, post-doctoral graduates, faculty that are bidirectional. Research, training, clinical interest, and active projects in international health occur in multiple in multiple departments. Goals for the School of Medicine, Office of Global Affairs include inventory current work, promote global health activities, build on funding opportunities, increase visibility, and foster bidirectional training and best practice using the following goals accomplished:

Goal 1. Promoted, oversaw, developed, and reviewed all global activities/initiatives within the School of Medicine:

- Inventory of what is being currently done within the School of Medicine has been completed, including student, post graduate and faculty level projects and existing collaborations out of the School of Medicine, within and outside of the University. *See Table 1 for inventory of current work.*
- Fostered collaborative efforts locally, nationally, and internationally, within focused areas of interest strength, priority.
- Formed a strategic planning group, establish goals, timelines, focus area of work (topic and region) and collaborations. *See Figure 1 for structure and interest groups by country and areas of collaborative strength.*

Goal 2. Enhanced training opportunities:

- Monitored and fostered communication, improved communication and oversee international training electives
  - Reviewed and revised medical student curriculum for global health
  - Reviewed and revised WSU student international rotations (for objective of trip, location site or work, sustainability, funding, competency, coordination with curriculum, policies for, risk assessment, etc....)
  - Reviewed and revised bidirectional international training rotations, e.g., selection process, adherence to policies, goals for student, post-doctoral or faculty level rotations, keeplog of people involved, curriculum, competencies, faculty development.
  - Creation of a Global Health research training curriculum for training and mentoring of international faculty and fellows, the first summer institute was successfully held in July/August 2020, see appendix for detail.
  - GHRC- Global Health Research Collaborative workshop aimed at providing quality global health education to local and foreign professionals early in their careers. Successfully held in 2019 training 38 faculty from 20 countries. Will be held biennially in July/August of 2022

Goal 3. Evaluated policies for best practice:

- Inventory/brought together existing policies, create an online resource policy manual(in progress)
- Gap analysis done of existing policies
  - Policies for travel, how is travel approved
  - Coordinate with curriculum for
  - Ethics review process for research projects
  - Risk mitigation
  - Costs, support for
  - Funding requirements met for sponsored work

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- GME requirements met for post-doctoral candidates

### Goal 4. Evaluated Relationships with International Medical Entities/Schools:

- Reviewed existing MOU's: content, with whom and with which institutions. Work to assure MOU and activity defined for areas of work
  - Goal is to develop collaborative relationships in focused areas of priority (country and topic)
  - Fostered, strengthen, and expand collaborative relationships
  - Evaluated how the relationship is approved, defined, scope, responsibilities, and commitments.
  - Evaluated how the relationship is funded
  - Defined what international relationships can include, Medical Schools, Public Health Entities, Hospitals, funding entities, research, training, or clinical collaborations.
  - Formalize Regional Hubs: Create regional hubs that are sources of training/research for broad geographical areas

### Goal 5. Provided Oversight, Monitor all International Research within the School of Medicine:

- Monitored all international research including work within and outside of university
  - The inventory is used to monitor research, it includes PI, department, funding entity, program/project, timelines, policies followed, progress to build programs, funding requirements met, productivity from. Multiple meetings with department heads, international researchers held, in country and in US
- Performed audit and surveillance of international work (in progress)
  - Developed an agreed upon audit tool
  - Reported findings observations, recommendations to relevant department head for action on if needed
  - Provided report/ regular meetings to Dean, of School of Medicine

### Goal 6. Development plan: identified and competed for viable international funding sources:

- Developed and actively maintained a comprehensive database on potential international funding sources.
- Supported development of faculty and administrative staff skills required to write competitive and successful grant applications for international research funding.
- Assisted faculty to effectively identify and compete for international research funding.
- Developed agency- or country-specific strategies to secure or compete for international sources of research funding
- Worked with department heads, leadership within the School of Medicine and University on fund development plan to include:
  - Grant Development
  - Set goals for grant submission related to global health, program grants, RFP's
  - Charitable, and foundation support
  - Internal support
- Development of the Global Health Research Collaborative was instrumental in working with faculty both at WSU and international partners for collaborative grant submission and mentoring.

### Goal 7. Worked with WSU PR department to develop a marketing plan, increase visibility (in progress):

- To improve the international visibility of WSU and internal communications that support faculty engagement and collaboration toward the acquisition of international research support.
- Emphasize and communicate the School of Medicine Global Mission throughout the University and communities in Detroit, across Michigan and internationally.

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- Implement transparent and open communications with faculty and alumni to broaden support and capacity for international research activities in the School of Medicine.
- Actively engaged international alumni, faculty, and students. Developed a marketing and communication plan
  - Promoted, market disseminate information on activities in global health to increase visibility of work being conducted
  - Promoted presentations at regional, national, and international meetings
  - Promoted publications in peer review journals

### Goal 8. Global Health Medical Student Concentration-Wayne State University School of Medicine-Henry Ford Hospital

- Introduction  
Our primary mission is to maintain Wayne State University School of Medicine and Henry Ford Hospital as leaders nationally and internationally in Medical Education. Over the last several years, the interest and need for Global Health has become enormous.
- Training:  
The global health concentration has been launched <https://medstudentresearch.med.wayne.edu/globalsc>
- General Description  
The proposed Global Health medical student education concentration is a several month longitudinal experience embedded in the already existing four-year medical school curriculum. An option of a graduate MPH or MBA degree will be provided to suitable candidates to be completed in an additional year of training. All university and medical school policies, expectations and graduation requirements are maintained.

During the global health related training, students will be assigned to didactic lectures and international experiential rotations. Students will be assigned to a primary mentor for completion of a capstone project by completion of training. Students will also have a separate option for short term international or local rotations in underserved locations.

The program coordinator and faculty mentor will determine assignments. There will be up to 20 students assigned to this concentration per year, and up to 10 will be selected for inclusion in an option for an MPH or MBA. (see attached curriculum)

### Goal 9. Public Health

- Detroit Health Department Collaboration
  - The Center for Emerging Infectious Diseases received 4.3 million dollars in federal funding to expand sequencing for COVID-19 and other infectious diseases
  - Objective is to collect and analyze genomic data to address emerging infectious disease threats and enhance the state's ability to respond to those threats
  - WSU will use the funding to increase sequencing capacity in the state starting with SARS-CoV-2 and then other infectious disease threats with the potential for broad community spread.
- Sapphire
  - Funding for the Michigan Sequencing Academic Partnership for Public Health Innovation and Response (MI-SAPPHIRE) is through a CDC Epidemiology and

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- Laboratory Capacity grant MDHHS received.
- MI-SAPPHIRE activities will include sequence generation and analysis, such as sample collection and sequencing; data processing, storage and sharing; and data interpretation and analytics.

Summary Issues to assure success for 2021 and beyond:

- Enhancement of the Global Health Research Collaborative to identify viable funding sources outside the US to support WSU research and serve as the center for global health research training and mentoring.
- Build on Strategies for helping faculty effectively compete for these funds
  - How to establish international partnerships
  - Opportunities for international exchanges, including students, that might be important for building collaborations
  - Ways to engage international alumni, faculty, and students
  - Workshops or other resources to help faculty compete for international funds
  - Agency – or country – region- specific strategies
- Creation of strong bi-directional initiatives with our international collaborative partners to help with medical, public health and pharmacy student exchange, mentorship, and training.
  - US partnerships to support international competitiveness
  - Resources needed to launch the initiative and a plan for sustained investment
  - Enhance curriculum for medical students
  - Build on bidirectional virtual training platforms

## **Program and Country Highlights**

### TRAINING

There are multiple bidirectional training initiatives in multiple locations, involving multiple faculty and departments including Latin America, Middle East, Africa, Asia, and Western Pacific. A partial listing is below:

#### Internal Medicine, Pediatrics and Emergency Medicine

Global Health Alliance (GHA) – The GHA, led by Drs. Ijeoma Nnodim Opara and Kristiana Kaufmann, continues to work to strengthen partnerships in the University. In the WSU SOM, the GHA has been working to build the Global Health Concentration with a robust curriculum that includes the Global and Urban Health and Equity Scholars program. The GHA has also been working with the WSU SOM World Health Student Organization (WHSO) to restructure their international experiential learning activities in collaboration with Child Family Health International (CFHI) who helped design a virtual experience for pre-clinical students this year. The GHA will continue to work with CFHI to Short Term Experiences in Global Health (STEGHs).

GLUE- The Global and Urban Health and Equity Scholars program has graduated our second class of 18 students and have accepted our fourth class of students. This new class is the most diverse with students, residents, and faculty from across several schools and disciplines. We continue to teach the CUGH curriculum and have adapted the latest edition. Our students will be presenting their Capstone projects this April. These projects include work in Detroit such as Freedom House, Samaritas, and First Aid First as well as community health programs in India.

Lao – Dr Kaufmann. The Lao Emergency Medicine Residency Program is now supporting three classes of residents and will graduated the first class this past September. Health Frontiers is actively recruiting for a new EM Coordinator position.

Social Determinants of Health and Quality Improvement Curriculum – Dr. Nnodim Opara has co-led this GME curriculum with Dr. Uddyback. The course consists of improving knowledge and practice around patient's social determinants of health and their outcomes. The course was rolled out across the DMC GME and has already produced some tremendous spinoff.

Medical Student curriculum for Global Health has been reviewed and revised. These efforts have involved multiple faculty and led by Chih Chuang, Kristina Kaufmann and Ijeoma Nnodim Opera, in collaboration with Dr Baker. Revision of short term medical experiences for student has expanded objectives to improve sustainability and competencies of students. Policies for visiting students reviewed and in process of revision, continuing work to find opportunities in Detroit for visiting students.

#### Department of Family Medicine & Public Health Sciences (DFMPPHS) FPH 7120 Global Public Health

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Focusing on the World Health Organization Sustainable Development Goals (WHO SDG) for 2015-2030, the course addressed prioritization and analysis of social determinants of health in reproductive health and communicable and chronic disease strategies through a multidisciplinary lens. Guest Lecturers from the WSU in international community health included Arun Kumar, MD, MPH, as well as class visitors who provided introduction to public health research protocol in eleven languages (Arabic, Bengali, Portuguese/Brazilian, Chinese, French/Canadian, German, Hindi, Malayalam, Spanish/Mexican and Yoruba).

An International Panel of focusing on WHO SDG Environmental & Occupational Health presented: Youcheng Liu, MD, ScD, MPH (Asia/China), Peter Whittaker, PhD (Europe/United Kingdom) and Jessica Riberio Menezes Borges, a WSU Study Abroad student (South America/Brazil). Based on their FPH 7120 culminating class assignment in a Student Symposium, five students submitted abstracts which were accepted and presented as posters at the WSU September 2019 Global Health, Justice, and the Environment Conference and the DFMPHS 2020 Research Day. FPH 7120: Global Public Health will be offered as online course in SS2021.

FPH 7120: Global Public Health is offered as online course in SS2021, open to graduate and professional students in the School of Medicine, College of Nursing, School of Social Work, College of Education, Eugene Applebaum College of Pharmacy and Health Sciences, College of Nutrition and Food Sciences, College of Liberal Arts and Sciences, and other fields relevant to global public health. The 2021 FPH7120 Global Public Health Syllabus is available for review on the WSU Canvas website.

### MATERNAL HEALTH

Dr Sonia Hassan leads women's health initiatives for the University. University Center for Women's Health led by Dr Sonia Hassan, with the goal to build international bidirectional relationships/programs in Women's Health. Dr Hassan participated in Women's Health conferences in Cairo.

Gil Mor (Mott) leads a program in Reproductive Health in collaboration with Huazhong University in Wuhan China. This collaboration included multiple funded projects with collaborative training, publications, mentorship, that includes joint symposia. In November 2019, Drs Mor and Zervos attended the signing ceremony in Wuhan for the Center for Reproductive Health at Huazhong. There was also interest in building other international training and research programs in Public Health.

### COMMUNICABLE DISEASE: Center for Emerging Infectious Diseases

Dr Zervos, in partnership with ministries of health, universities, now over 1000 hospitals, PAHO and WHO lead projects in antimicrobial resistance in 20 countries in Latin America, Africa, Middle East, Africa, Asia and Western Pacific. Additional projects under development include COVID-19, HIV, Dengue, environment and health, immunization.

The creation of the Center for Emerging and Infectious Diseases reflects the highest level of collaboration within the School of Medicine. When not used for clinical care and training, the unit will be a site for research and innovation in highly infectious diseases. It also serves as a

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source of generating revenue through other laboratory services for area clinics and hospitals. The CEID is one element in the spectrum of public health response to pandemics in particular and infectious diseases in general. Public health experts will provide guidance and assistance with regard to healthcare worker (HCW) exposure and monitoring protocols. CEID also provides education internally to WSU SOM students and externally to the community which is essential in mitigating community fears regarding pandemics.

### ENVIRONMENT AND HEALTH

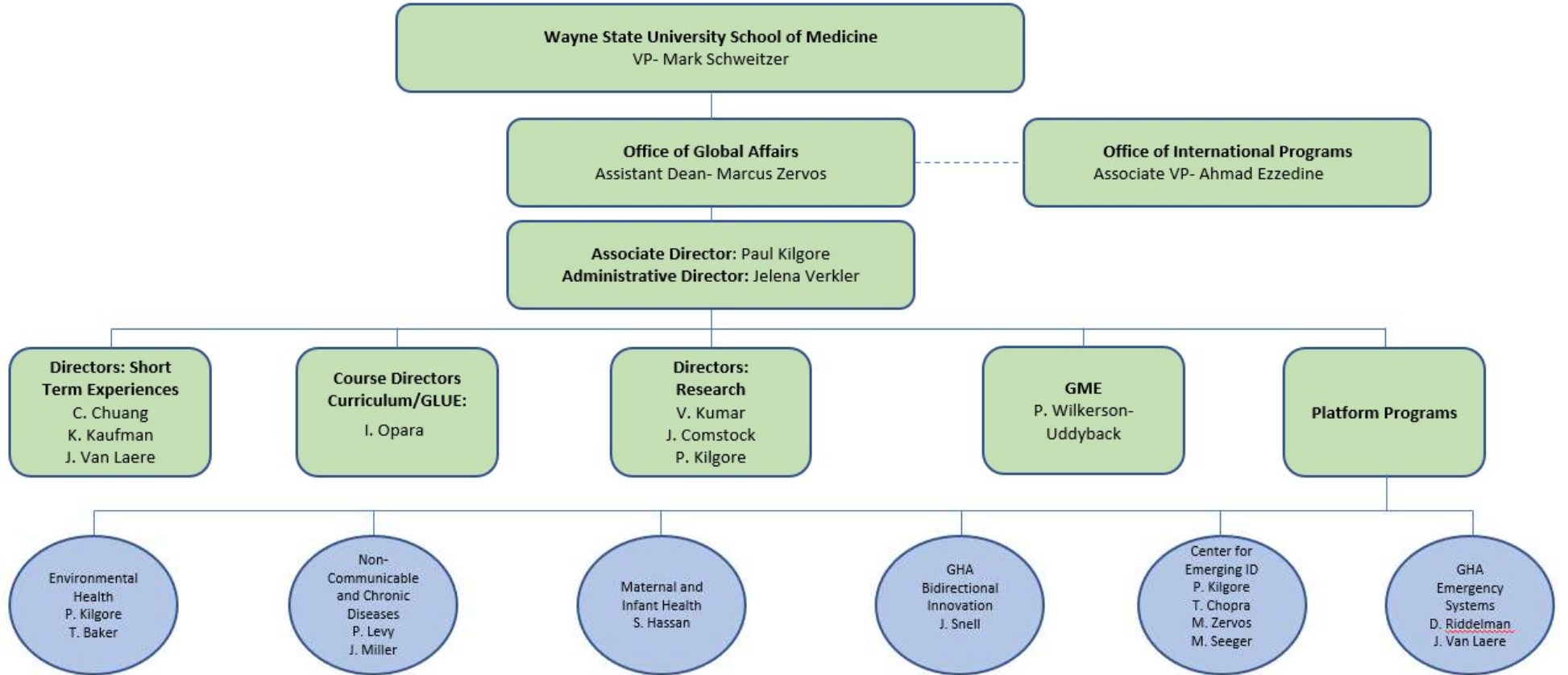
Multiple projects in development in China, SE Asia, and Africa on impact of the environment on health.

### EXTERNAL FUNDING

Philanthropic commitments of \$100,000 for medical student related training in Global Health, Multiple grant submissions and funded programs as outlined in the inventory below.

### Regional Hubs in Collaboration with Ministry of Health and Regional WHO (pending)

1. Middle East Consortium
  - a. University of Jordan- Amman, Jordan
  - b. American University of Beirut- Beirut, Lebanon
  - c. Cairo University- Giza, Egypt
  - d. United Arab Emirates University-Al Ain, United Arab Emirates
2. Asia
  - a. Manipal Academy of Higher Education- Manipal, India
  - b. Kathmandu Model Hospital-Kathmandu, Nepal
3. South America
  - a. -Sao Paulo, Brazil



### Competencies



### Interest Groups





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Institution/Location	Personnel	Project Title/Focus	Program Activities
<b>MIDDLE EAST</b>			
<b>Israel</b>			
Technion-Israel Institute of Technology	Chih Chuang Jack Sobel	Student Faculty Exchange	
Hadassah Academic College	Robert Folberg	Training	
Emek Medical Center in Afula	Robert Folberg	Training	
<b>Lebanon</b>			
Notre Dame des Secours University Hospital, Lebanon	Marcus Zervos Madonna Matar	Impact of a Post Prescription Antimicrobial Stewardship Program in Lebanon	-Assess the effectiveness of an antimicrobial stewardship program at Notre Dame des Secours University Hospital - Evaluate practices for successful implementation of post-prescription review and feedback (PPRF) stewardship program
American University of Beirut (AUB), Lebanon	Madonna Matar	Stewardship Survey among Lebanon hospitals	
AUB	Madonna Matar	Environmental health, maternal health, communicable disease, refugee health	Bi-directional training
AUB	Rouba Ali-Fehmi Robert Morris Wael Sakr	International Academy of Pathology- Arab division	In October 2020, multiple Wayne State faculty will participate in the International Academy of Pathology- Arab division in Lebanon
Lebanese American University, Lebanon	Paul Kilgore Linda Jaber	Collaboration with pharmacy school	Chronic Disease Diabetes
Arab School of Pathology, Beirut	Rouba Ali-Fehmi Wael Sakr	GU and GYN pathology workshop, International Academy of Pathology, Arab Division	
AUB	Rouba Ali-Fehmi	Refugee Health	Database
United Arab Emirates			

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Tawam Hospital	Robert Morris Rouba Ali-Fehmi	Built relationship at the Emirates Oncology Conference in Emirates Palace, Abu Dhabi, Nov. 21, 2015	
<b>Qatar</b>			
Doha Hammad Hospital	Rouba Ali-Fehmi	Virtual Training Hammad Hospital Doha Qatar	
	Alicia Bollig-Fischer Rouba Ali-Fehmi	“The molecular link from type 2 diabetes to breast cancer.” grant NPRP7-363-3-089 Qatar Research Foundation (multi-institute)	Duration of Grant: 1/01/2015- 1/12/2018 \$854,244 total
<b>Jordan</b>			
Amman	Wael Sakr Rouba Ali-Fehmi	Virtual Training	
King Hussein Hospital	Marcus Zervos Rouba Ali-Fehmi	Collaborative Research/Virtual Training	With WHO and Jordan Ministry Health
University of Jordan	Marcus Zervos	Collaborative Research/Virtual Training	With WHO and Jordan Ministry Health
Yarmouk University	Marcus Zervos	Collaborative Research/Virtual Training	
<b>Oman</b>			
Muscat	Wael Sakr Rouba Ali-Fehmi	Virtual Training	
<b>Turkey</b>			
	Paul Kilgore	Health Outcomes Among Refugees	

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Gaziantep University	Basim Dubaybo Marcus Zervos	Covid-19 in the MENA Region Conference May 30-31 <sup>st</sup> , 2022	
<b>Syria</b>			
	Paul Kilgore Gaziantep University, LAU, AUB, WSU SOM, WSU VP for International Activities	Syrian Refugee and Migration Conference	-Presentation in Symposia of conference, focused on use of Point-of-Care diagnostics in refugee health situations -Conference oral presentation, abstract and conference manuscript
<b>AFRICA</b>			
<b>Ethiopia</b>			
	Nancy Love (WSU) Marcus Zervos (WSU) Dean Triantafilou (IOCC) Dr. Seifu Tirfie (IOCC) Dr. Asfar (ENAHPA) Dr. Dehne Mengiste (ENAHPA)	Water, child/maternal health, antimicrobial resistance	
<b>Tunisia</b>			
	Jihen Maatoug Hassen Ghannem	Health Research Forum- Health research and building institutional capacity	
	Maatoug Ibn El Jazzar	Strengthening of the institutional capacity of the Faculty of Medicine of Sousse in research and intervention to prevent NCDs at the community level	(Re-apply for NIH training grant, D43)
Susa University	Lamia Fathalah	Collaboration with Wayne State Department of Pathology at St. Johns Hospital	
<b>Uganda</b>			

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	McGowan, University of Windsor – PI	Getting a GRIP on Hypertension in Uganda: Giving Repetitive Isometric Exercise for Blood Pressure Control	
<b>Zambia</b>			
	Wang	Zambia Healthy Choices Project	Project to improve self-management of HIV and alcohol use in emerging adults in Zambia
<b>Egypt</b>			
Ain Shams University, Cairo	Donald Weaver	Virtual Training	
Ain Shams University, Cairo	Sudeshna Bandyopadhyaya Rouba Ali-Fehmi	Regularly participate in Breast and Gynecology International Cancer Conference (BGICC), one of the largest annual Oncology conferences in Cairo, Egypt, 2014-Present	
WHO Cairo	Marcus Zervos	Various public health for region	
Cairo University	Sonia Hassan	Research Collaboration/Training	
<b>South Africa</b>			
	Lavage	Adolescent Medicine Trials Network for HIV/AIDS Intervention (ATN) National Community Advisory Board	
Ghana			
Jirapa Hospital		Ghana Vocational Training Team, Rotary Foundation training program	Helping babies breathe program, neonatal nasal CPAP, therapeutic hypothermia, sepsis control, temperature maintenance; Donated medical equipment: CPAP units
<b>Kenya</b>			
Mutomo Hospital Park Road Nursing Home		Foundation training program	Helping babies breathe program, neonatal nasal CPAP, therapeutic hypothermia, sepsis control, temperature

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			maintenance; Donated medical equipment: CPAP units
<b>USA/DETROIT-BIDIRECTIONAL</b>			
USA, multiple states	Rouba Ali-Fehmi	NAAMA	-Undergraduate and medical students participated in International Conventions in Jordan, Lebanon, Michigan, and Atlanta -Presented research projects -Volunteered in refugee camps
Detroit	Rouba Ali-Fehmi Mona Maki Michelle Kote Mai Hussein Phil Levy	ACCESS	Bi-directional training, exchange rotations, clinical care, multiple projects; smoking, obesity, HPV
Detroit	Ijeoma Opara Jamie Snell	Freedom House	Health outcomes of asylum seekers
Detroit- GLUE	Kristiana Kaufmann	First Aid Detroit	EM training
Detroit-GLUE	Amy Cortis	Samaritas	Homeless support
Detroit	Paul Kilgore	Global Health training courses and workshops	Course entitled “Foundations of Global Health”
Detroit	Paul Kilgore	Evaluation of tracking system identification of children during repeated clinic visits. Less developed countries	- VacTrack Immunization tracking system with Palm Vein ID biometric signature linked to server-based immunization
Detroit	Phillip Levy	Phoenix Grant	Michigan Health Endowment Fund: Population Health Outcomes and Information Exchange (PHOENIX) is a new technology platform hosted by WSU that will collect real0time health data to determine what community factors may be contributing to health challenges
Detroit	Vijaya Arun Kumar	DMC foundation grant- Hamtramck HELP	Hypertension education and intervention project in Hamtramck, using a novel community participatory

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			approach. Grant submitted- Principal investigator Total Period of Support: July 1, 2020 – Dec 31, 2021
Detroit Mayor's office/Detroit Health Department	Marcus Zervos Phillip Levy Ijeoma Opara	Multiple COVID-19 Related initiatives including testing, nursing homes, homeless shelters, contact investigation, and immunization/vaccine hesitancy	
Detroit, Jamaica, and India	Vijaya Arun Kumar	Prospective International Validation of the Pulmonary Embolism Rule Out Criteria	SAEMF/Global Emergency Medicine Academy (GEMA) Research Grant Grant submitted- co- investigator - Total Period of Support: July 1, 2020 – June 30, 2021
	Linda Kaljee Marcus Zervos	COVID-19 Vaccine Confidence	Establishing community linkages to support engagement and communication throughout the processes of development, testing, and implementation of COVID-19 vaccines
<b>SOUTHEAST ASIA</b>			
<b>Bhutan</b>			
	Marcus Zervos Pem Chuki Jigme Dorji Wangchuck National Hospital	Impact of a Post Prescription Antimicrobial Stewardship Program, 4 country project	-assess the effectiveness of an antimicrobial stewardship program - evaluate practices for successful implementation of post-prescription review and feedback (PPRF) stewardship program
			Funded International Society for Infectious Disease (ISID) Pfizer, International Joint Commission
	Marcus Zervos Pem Chuki Jigme Dorji Wangchuck	Evaluation and control of MDR in neonatal unit, evaluation of causes of death and epidemiology of MDR	Neonatal sepsis

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	National Hospital		
	Marcus Zervos Pem Chuki Jigme Dorji Wangchuck National Hospital, and country wide implementation, WHO and Ministry of Health, Bhutan	WHO feasibility and implementation of WHO toolkit	Consultancy to conduct feasibility studies of the draft WHO toolkit on antimicrobial stewardship programs for hospitals in Bhutan, Malawi, Federated States of Micronesia, and Nepal. Funded WHO
<b>Nepal</b>			
	Marcus Zervos Linda Kaljee Deepak Bajracharya Ministry of Health, Nepal	Impact of a Post Prescription Antimicrobial Stewardship Program, four hospitals, in Kathmandu and Pokhara over 4 year, currently part of 4 country longitudinal project, part of multi country AMS project	Assess the effectiveness of an antimicrobial stewardship program - evaluate practices for successful implementation of post-prescription review and feedback (PPRF) stewardship program Funded ISID, Merck, Pfizer, Nepal Ministry of Health, International Joint Commission
	Susan Davis Marcus Zervos Linda Kaljee	Antibiotic Resistance	Adaptation and evaluation of a community pharmacist stewardship program
	Deepak Bajracharya		Optimize antibiotic use and reduce risks for community- acquired multi-drug resistant pathogens in Nepal, funded Pfizer
	Marcus Zervos Linda Kaljee Deepak Bajracharya	Distance learning in AMR, stewardship	The Global Learning in Antimicrobial Resistance (GLAMR) Platform. Funded Pfizer
	Susan Davis Marcus Zervos Linda Kaljee Deepak Bajracharya	Antibiotic Stewardship	A Pharmacy Antimicrobial Stewardship and Economic Program (PhASE) for Community Pharmacists in Kathmandu Valley, Nepal, funded Merck

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	Marcus Zervos Linda Harden Linda Kaljee Deepak Bajracharya	Antibiotic Stewardship	A hospital-based and primary health care Centre (PHCC) stewardship training program for nurses and midwives to increase infection control, optimize antibiotic use, and reduce risks for multidrug resistant pathogens in Nepal, funded Pfizer
	Paul Kilgore HFHS Global Health Initiative, GTA Nepal, Hospitals in Nepal	AMR and antibiotic stewardship	-Surveillance for MDRO in Kathmandu hospitals and support for patient safety initiatives in Nepal -Planning and introductory organizational meetings held with Manipal, India collaborators to write and submit training grants and other research grants to US NIH
GLAMR 2	Linda Kaljee Marcus Zervos	A web platform to support AMR stewardship training in Nepal	
	Linda Kaljee Marcus Zervos Susan Davis	AMR stewardship training for community Pharmacists	
	Paul Kilgore GTA Nepal, Hospitals in Kathmandu, National Laboratory of Nepal	Evaluation of vaccine impact on AMR in Nepal	-Grant application and preparatory work for evaluating impact of pneumococcal conjugate vaccine in Nepal
AMR Stewardship for nurses/midwives Nepal	Linda Kaljee Marcus Zervos	Program to train nurses and midwives in AMR stewardship and IPC	
	Linda Kaljee Marcus Zervos	Outpatient COVID outreach program	
<b>Thailand</b>			
	Wang	Prep among Thai young transgender women Prep among Thai young men MSM	Health intervention using PREP
<b>India</b>			
ICMR, CDC, WHO, International Joint Commission, Hospitals	Marcus Zervos, MD I. Brar, MD G. Alangaden, MD	Antimicrobial resistance, infection control, epidemiology, clinical training & education	Training & mentorship for local clinic and hospital-based providers; Setting up Antibiotic Stewardship programs., bidirectional training for students, residents,



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in Chennai, New Delhi, Hyderabad, Vellore, Ludhiana, MGR, Manipal	Chopra, MD K. Suganthini		fellows, and faculty
CMC Vellore, Manipal University, Clinical Infectious Disease Society (India)	P. Chandrasekar, MD	Neutropenic Sepsis	Arrange for WSU student's fellows to travel to India and do community based participatory research at CMC, Vellore
National Hospital TB and Respiratory Diseases, New Delhi	N. Markowitz, MD	TB, HIV	Training research, video conferencing
Asha Kirana, Mysore	N Markowitz, MD I. Brar	HIV	Training, teleconferencing
	T. Chopra	COVID-19	COVID educational assistance hotline
Manipal Academy of Higher Education (MAHE)	Marcus Zervos, T Chopra, A Kumar	AMS conference April of 2022	Multiple projects, including diagnostic microbiology, CDC application for antibiotic stewardship, COVID, resilience, training and research,
Society of Emergency Medicine in India (SEMI), Apollo Hospital, Fortis Hospital System: Kolkata MGR University: Chennai AIIMS: New Delhi MAHE: Manipal	Vijaya Arun Kumar, MD MPH	Emergency medicine and Community medicine. Development of EM residencies, Disaster preparedness and Global Health research training.	Community based participatory research along with collaborative EM research. Has conducted several clinical research training workshops and is in the process of developing disaster preparedness and is presently working with MAHE for collaborative studies and submission of a D 71/D43 grant. He has been working on the development of curriculum for the Summer Institute for Global Health Research and Fieldwork practices conducted in July 2020
	Amy Cortis	Pediatric and Neonatal Emergencies	Developing a program for training of staff in early recognition and management of neonatal emergencies
	Gaurav Kapur, MD	Pediatric Nephrology	Innovative Pediatric research, PI on multiple global innovative projects focused on pediatrics and cardiovascular medicine
	Phillip Kuriakose, MD	Hemophilia	Keynote speaker at several

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			locations in India
	Vrushali Dabak, MD	Sickle Cell Disease	Runs the Sickle Cell Center, Global training and education of personnel in Sickle Cell Disease
	Paul Kilgore, MD MPH	Field study implementation and training in developing countries	Support of local partner organizations in implementing training, education and intervention programs with evaluation components
	Helen Berlie, PharmD	Diabetes, Patient centered medical home	
	Vinod Shidham, MD	Innovative research in Microbiology and anti-infective agents.	
	Sudeshna Bandyopadhyay, MD	Breast Pathology and Cyto Pathology	Cervical Cancer Screening
Indian Association of Surgical Oncology	Donald Weaver, MD	Surgical Oncology	Keynote speaker at several locations in India
	Rahul Vaidya, MD	Spine Surgery	Keynote speaker at several locations in India
NIMHANS, Bangalore	Vaibhav Diwadkar, PhD	Schizophrenia and early Diagnosis	Early diagnosis of Schizophrenia among adolescents
	Satinder Kaur, MD	Preeclampsia among pregnant women, Cervical Cancer	Cervical Cancer Screening
Pardada Pardadi Educational Society, Anupshahr, India	Renuka Gupta	CEO	Provide Health care to more than 600 children and their families in a remote village in India. Design, implementation, and evaluation of community-based public health programs in rural India.
Pioneer Medical Research Foundation (India)	Madhukar Ghatpande	Managing Director	Design, implementation and evaluation of community-based public health programs in India: NGO engagement in India
Community Health	Adishesan Arulvisagan	Chief Medical officer in charge	Provides health services such as curative care in addition

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Centre, Mannadipet (India) Government of Puducherry Community Health Centre, Mannadipet			to preventive care especially within the area of Reproductive Maternal Newborn, Child, and adolescent Health
Kasturba Medical College, Manipal	Arun Kumar	EM training partnership	Focus on ultrasound
All India Institute of Medical Sciences (AIIMS), New Delhi	Arun Kumar	In process of establishing MOU for training and research	
Ekam Foundation (India Non-profit organization, India	Dr. Sailakshmi Balijepalli	Founder and managing trustee	Provides quality healthcare to underprivileged children and mothers with a specific focus on lowering the rates of infant, neonatal and maternal mortality. They provide direct medical services, public health support, capacity building, and community participation in health governance
	Arun Kumar	CHEI	Train the trainer -women's health
<b>Pakistan</b>			
	Linda Kaljee Marcus Zervos	AMR based hospital stewardship	Antibiotic stewardship
	Linda Kaljee Marcus Zervos	Survey of outpatient pharmacy practices	
	Marcus Zervos	Nishtar University	MOU for bidirectional training, research and public health
<b>Myanmar</b>			
	Marcus Zervos Ministry of Health Myanmar	Implementation of WHO toolkit for antimicrobial stewardship in LMIC	Antimicrobial Stewardship
University of Medicine, Yangon	Marcus Zervos H Hlaing W Myaing	Hospital based antibiotic stewardship	Bidirectional training, and implementation
<b>Lao PDR</b>			

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	Kristiana Kaufmann	EM Development, health frontiers EM residency	Bidirectional training and research
<b>Japan</b>			
Urayasu	Paul Kilgore Meikai University School of Dentistry Nihon University School of Medicine	Development of novel nucleic acid tests for detection of vaccine pneumococcal serotypes using loop-mediated isothermal amplification	- Laboratory development including selection of primer sets for PCV-13 focused LAMP assay -Peer-reviewed publication in Nature group journal called Scientific Reports
Okayama Tsushima-Naka, Okayama Japan	Karmanos Okayama University	General MOU Karmanos	Exchange for cancer biology program
Sendai	Eishi Asano WSU Nobuo Yaegashi, Dean School of Medicine, Nobukazo Nakasato Tohoku University, Neurology	Neurology, training and research, MOU	Bidirectional training including conferences
Tokyo	Gil Mor Satoshi Hayakawa Nihon University School of Medicine, Ageo Chuo General Hospital	Reproductive health	Endometritis, immunology
<b>China</b>			
Shanghai Fudan University	JJ Wang	Grant to specifically support Fudan-Wayne State University Alliance Stem Cell Translational Research Laboratory, which a collaboration project between Fudan and WSU- MOU	International collaboration grant offered by City of Shanghai. The current funding level is RMB 1.0 million/year (\$142,000). In 2019, received RMB560,000/2019,(\$79,500) due to late start of the funding in June. The fiscal year in China ends at 12-31.
Shanghai Fudan	JJ Wang Marcus Zervos	Annual conference, bidirectional, 2020 in China, MOU	The Fudan-WSU joint lab still received this year's fund from a 5-year grant (This is the second year) with a

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University	Ahmad Ezzeddine Stephen Lanier		much smaller budget (< 180,000 RMB, budgeted: \$1.0million/year) from Shanghai city grant agency for supporting Fudan-WSU collaboration and international collaboration. However, we could not use this fund to support international traveling due to Covid-19 pandemic. We used this fund to support research projects in the Fudan-WSU joint lab for reagents, etc...
East China Normal University		Medicine, MOU	Bidirectional training, Joint training program, research and conferences
Nanjing Medical University		Medicine, MOU	Bidirectional Training, in basic medical sciences
Wuhan Huazhong University Tongji Medical College	Gil Mor Aihua Liao Jianguo Chen	Multiple projects in reproductive health, maternal health, immunology, MOU	Training and research. Grant in China from the Chinese government: Title: The mechanism of Tim-3 <sup>+</sup> Treg cells accumulating at the maternal- fetal interface and regulating the immune tolerance, supported by NSFC (No. 81871186)
Wuhan	HUST School Deans of School of Medicine and Public Health Tongji Medical College	Environmental health, maternal health, communicable disease	Bi-directional research, training
Wuhan- Confucius Institute		International programs	Opportunities for bidirectional training, short- and long-term electives
Zhengzhou, Henan University		MOU Medicine	Bidirectional training, including Conferences
	Chih Chuang		WSU undergraduate students
<b>ASIA PACIFIC</b>			
<b>Philippines</b>			
St Lukes Medical Center	Marcus Zervos Carmen Echeverri	Impact of a Post Prescription Antimicrobial	Assess the effectiveness of an antimicrobial stewardship

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			program
St Luke's Medical Center, Manila		Stewardship Program, four hospitals over 4 year, currently part of 4 country longitudinal project, part of multi country AMS project	- evaluate practices for successful implementation of post-prescription review and feedback (PPRF) stewardship program, funded Pfizer, ISID, International Joint Commission
University of Santo Tomas	Folberg	General MOU	Bidirectional Training
<b>Federated States of Micronesia</b>			
	Marcus Zervos Lisa Barrow FSM Ministry of Health	Impact of a Post Prescription Antimicrobial Stewardship Program, four country project, 4 country projects	-assess the effectiveness of an antimicrobial stewardship program -evaluate practices for successful implementation of post-prescription review and feedback (PPRF) stewardship program Funded ISID, Pfizer International Joint Commission
<b>CARIBBEAN</b>			
<b>Haiti</b>			
Children's Hospital		Collaboration with Mitch Albom	Telemedicine, care of child with possible TB
	Marcus Zervos Mentor Lucien	National Plan Antimicrobial resistance, Ministry of Health National Laboratory	Implementation of Haiti national plan for antimicrobial Resistance
	Marcus Zervos Mentor Lucien	Ministry of Health National Laboratory	Cholera, epidemiology and control, HIV
	Chih Chuang	Bidirectional training, WSU med student short term trip	WSU med student short term trip
University of Notre Dame	Chih Chuang	Bidirectional student exchange	

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Mirabilais Hospital	Chih Chuang	Bidirectional student exchange	
Quesquea University	Chih Chuang	Bidirectional student exchange, short term electives and student research	
	Paul Kilgore MOH Haiti, National Laboratory of Haiti	vaccines, control of cholera	- Collaboration in writing of review article on cholera and sepsis with Mentor Lucien et al, Haiti. -Review peer-reviewed publications and abstracts for meeting presentations.
<b>Jamaica</b>			
	University of West Indies Vijaya Arun Kumar Kristiana Kaufmann Jeff Van Laere	Bidirectional student exchange, emergency medicine program, Collaborative Research Development	Bidirectional training including research, short term student electives, faculty development
<b>Bahamas</b>			
Nassau	Philip Levy (WSU) Dr. Jean Williams-Johnson Dr. Krista Wells University of West Indies		External Examiner, Visiting Professor June 2-8, 2019
	Samiran Ghosh	National Implementation of FOYC+CImPACT in The Bahamas: implementation strategies and improved outcomes	Collaboration with Indian Institute of Technology in writing article in sexual risk reduction intervention
<b>SOUTH/LATIN AMERICA</b>			
<b>Argentina</b>			
	Marcus Zervos Rodolfo Quiros PROA: multiple hospitals, Argentina Ministry of Health	Impact of a Post Prescription Antimicrobial Stewardship Program	-assess the effectiveness of an antimicrobial stewardship program - evaluate practices for successful implementation of post-prescription review and feedback (PPRF) stewardship program Funded ISID Merck , Argentina Ministry of Health

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	Marcus Zervos Claudia Sola University of Cordoba, and Buenos Aires National Laboratory	Epidemiology of antibiotic resistance in Staph aureus, vibrio, salmonella	Clinical and molecular epidemiology, 'one health' Funded by Cordoba University and Argentina government Grants
	Marcus Zervos Claudia Sola; University of Cordoba, South American ID Society, Buenos Aires	Bidirectional training	Faculty and post-doctoral fellow, student exchange, participation in international congress as Faculty
	Philip Levy (WSU) Dr. Javier Sala-Mercado	Jornada Internacional de Cardiologica 2019	-Speaker, "Heart Failure De Novo – A Different Entity?" - Speaker, "ACC Products to Improve Global Cardiovascular Care: NCDR Registries, Accreditation Service Lines and COE" - Panelist, "Acute Heart Failure Cases" - Panelist, "Meet the Experts – How to Get Published" August 2019
<b>Colombia</b>			
	Marcus Zervos Rodolfo Quiros PROA: multiple hospitals	Impact of a Post Prescription Antimicrobial Stewardship Program	-assess the effectiveness of an antimicrobial stewardship program - evaluate practices for successful implementation of post-prescription review and feedback (PPRF) stewardship program Funded ISID Merck
	Marcus Zervos Katherine Reyes	Antibiotic resistance epidemiology	Epidemiology of resistance; funded by US NIH



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	Cesar Arias El Bosque University		
<b>Bolivia</b>			
	Marcus Zervos Rodolfo Quiros PROA: multiple hospitals, 8 country participation	Impact of a Post Prescription Antimicrobial Stewardship Program	assess the effectiveness of an antimicrobial stewardship program - evaluate practices for successful implementation of post-prescription review and feedback (PPRF) stewardship program Funded Merck
<b>Brazil</b>			
	Marcus Zervos Rodolfo Quiros	Impact of a Post Prescription	assess the effectiveness of an antimicrobial stewardship
	PROA: multiple hospitals, now with Ministry of Health covering 2,000 hospitals in Brazil	Antimicrobial Stewardship Program	- evaluate practices for successful implementation of post-prescription review and feedback (PPRF) stewardship program Funded Merck
Sao Paulo	Philip Levy (WSU) Dr. Marcelo Franken	American College of Cardiology Latin America Quality Summit	-Speaker, "ACC Accreditation & International Centers of Excellence: Improving Cardiology Care Worldwide" - Quality Improvement Tools for ACS Management: Chest Pain - MI registry December 2019
	Philip Levy (WSU) Dr. Marcelo Franken	ACC/Einstein Symposium- Cardiology Year in Review 2019	- Panelist, "Case Session 3 – Heart Failure" December 2019
	Institute de Ciencias Biomedicas, Universidade de Sao Paulo	Bidirectional training	
<b>Chile</b>			
	Marcus Zervos	Impact of a Post Prescription	assess the effectiveness of an antimicrobial stewardship

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	Rodolfo Quiros PROA: multiple hospitals, 8 country participation	Antimicrobial Stewardship Program	program - evaluate practices for successful implementation of post-prescription review and feedback (PPRF) stewardship program Funded ISID Merck
<b>Costa Rica</b>			
	Kristiana Kaufmann Ijeoma Opara	WHSO Student Global Health	Building Partnership with CFHI and CSIS
<b>Ecuador</b>			
	Marcus Zervos Rodolfo Quiros	Impact of a Post Prescription	assess the effectiveness of an antimicrobial stewardship program
	PROA: multiple hospitals, 8 country participation	Antimicrobial Stewardship Program	- evaluate practices for successful implementation of post-prescription review and feedback (PPRF) stewardship program Funded ISID Merck
	Marcus Zervos Jeannette Zurita	Epidemiology of MDR salmonella, Staph aureus	Clinical and WGS of strains
	Marcus Zervos Jeannette Zurita	Evaluation of a nosocomial outbreak of <i>M. abscessus</i>	Epidemiology and strain analysis and control measures
	Chih Chuang Kristiana Kauffmann USFQ, Quito	WHSO student short term trip	Fall WHSO trip to Ecuador, funded by philanthropy, student Fundraising
Universidad San Francisco de Quito	Marcus Zervos	Bidirectional training and research	
Ministry of health	Marcus Zervos	Public health	Advisor for COVID response
<b>Guatemala</b>			
El Programa De Medicina De Emergencia Del Instituto Guatemalteco De	Dr. Danie Riddelman	Emergency medicine residency	Establishment of EM program in Guatemala, City EM electives Bidirectional training

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Sequiridid Social			
Francisco Marroquín Medical School (UFM), Guatemala	Marcus Zervos	Student faculty exchange	
<b>Panama</b>			
	Marcus Zervos Rodolfo Quiros	Participation in international south American ID congress with PAHO	Antimicrobial resistance
	Marcus Zervos Rodolfo Quiros PROA: multiple hospitals, 8 country participation	Impact of a Post Prescription Antimicrobial Stewardship Program	assess the effectiveness of an antimicrobial stewardship program - evaluate practices for successful implementation of post-prescription review and feedback (PPRF) stewardship program Funded Merck
<b>Paraguay</b>			
	Marcus Zervos Rodolfo Quiros	Bidirectional training	Pan American ID society meeting 2019
<b>Peru</b>			
	Marcus Zervos Rodolfo Quiros PROA: multiple hospitals, 8 hospital participation	Impact of a Post Prescription Antimicrobial Stewardship Program	assess the effectiveness of an antimicrobial stewardship program - evaluate practices for successful implementation of post-prescription review and feedback (PPRF) stewardship program Funded Merck
Ceyetano University	Marcus Zervos Coralith Garcia	Epidemiology of MDR organisms	Epidemiology and WGS strain analysis
Ceyetano University, Lima		Bidirectional training	WSU medical student short term elective in Peru, Gorgas Course
<b>Uruguay</b>			
	Marcus Zervos Rodolfo Quiros	Impact of a Post Prescription	assess the effectiveness of an antimicrobial stewardship

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	PROA: multiple hospitals, 8 country participation	Antimicrobial Stewardship Program	program -evaluate practices for successful implementation of post-prescription review and feedback (PPRF) stewardship program Funded Merck
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Appendix G CEID Activities

Project Title/Focus	Personnel	Program Activities
<b>Public Health</b>		
Detroit Health Department (DHD) City of Detroit Mayor office	Marcus Zervos	Zervos named advisor to city of Detroit, and DHD for COVID-19 prevention, worked in consultation with Mayor office and DHD on a variety of initiatives
SAPPHIRE MDHHS with WSU UM, MSU and Mich Tech	Teena Chopra PI Paul Kilgore Marcus Zervos Wanqing Liu	4.3M award to WSU for genome sequencing for public health interventions, WSU is in partnership with DHD
Nursing homes Detroit: COVID prevention  DHD- CDC-MDHHS	Marcus Zervos Paul Kilgore Teena Chopra WSU Nursing students and faculty pharmacy students	Worked to prevent infections in 26 nursing homes in Detroit, in partnership with DHD, had sustained control of infections, hospitalizations and deaths , even with spikes in infections in Michigan, and Detroit otherwise, Manuscripts accepted for publication : ICHE and MMWR
Nursing Homes DHD-MDHHS	Marcus Zervos	Evaluation and control of an outbreak of multiantibiotic resistant bacteria in a Detroit Nursing home
Homeless shelters, unsheltered homeless  DHD-CDC-MDHHS	Marcus Zervos Paul Kilgore Ijeoma Opera Jamie Snell Street Medicine Detroit WSU nursing students and faculty, WSU medical students	Worked to prevent infections in 29 homeless shelters in Detroit, including efforts in COVID facilities. Worked with students to immunize and provide guidance to prevent infections in unsheltered homeless
COVID investigations DHD-CDC	Marcus Zervos Paul Kilgore Teena Chopra	Worked in partnership with DHD to evaluate and control outbreaks in various settings in Detroit, including schools, business, international cargo ships
DHD-community partners	Marcus Zervos Paul Kilgore Matt Seeger Teena Chopra WSU medical students, Nursing students pharmacy students	Worked to reduce vaccine hesitancy, increase vaccine deployment of COVID vaccine in Detroit

Appendix G CEID Activities

DHD-community partners, Mayor office	Marcus Zervos Paul Kilgore Teena Chopra WSU medical students, Nursing students pharmacy students	Worked to provide guidance on COVID testing, including vulnerable populations, first responders, critical infrastructure, impacted efforts to bring workforce back to work safely,
WSU Health committee	Marcus Zervos Paul Kilgore Teena Chopra	Weekly meeting with the WSU health committee led by Laurie Clabo
Schools Detroit Public Schools Roeper School	Teena Chopra	Helped with COVID response as a part of their covid task force. Helped draft policies and provided testing resources through Wayne Health.
Churches/Temples	Teena Chopra	Supported their COVID response and helped with vaccine education
Mobile Hand Hygiene stations	Teena Chopra	Installed 6 mobile hand hygiene stations at homeless shelters and temples
<b>Communication and Community Engagement</b>		
“Lessons Learned” Op Ed	Marcus Zervos Paul Kilgore Teena Chopra Matt Seeger	Lead article in the <i>Detroit Free Press</i> , Print and On-line edition <a href="https://www.freep.com/story/opinion/contributors/2022/02/01/covid-19-infectious-disease-doctor/9290350002/">https://www.freep.com/story/opinion/contributors/2022/02/01/covid-19-infectious-disease-doctor/9290350002/</a>
“Social Media”	Marcus Zervos Paul Kilgore Teena Chopra Matt Seeger	Development of social media presence, Twitter and Linked-In. Regular posting in these channels.
Public Health Preparedness Conference April, 2022 - Atlanta	Marcus Zervos Paul Kilgore Matt Seeger	Presentation at the National Association of County and City Health Officials (NACCHO) annual conference on lessons learned from Covid-19.
Crisis and Emergency Risk Communication Webinar-Public Health Prepared, University of Michigan.	Matt Seeger	Inaugural presentation for University of Michigan’s Public Health Prepared Webinar Series.

Appendix G CEID Activities

Schools, Detroit Public Schools, Roeper School	Teena Chopra	Vaccine education, education on measures to prevent covid
Churches/temples/homeless shelters	Teena Chopra	Vaccine education, education on measures to prevent covid, address vaccine hesitancy
Antimicrobial Stewardship and Resistance Conference	Teena Chopra	Vellore India CMC (virtual meeting)
Antimicrobial stewardship and resistance conference	Marcus Zervos December 2021	With WHO and Ministry of Health in Kathmandu, Nepal
Infections in immune compromised host symposium	Marcus Zervos	Amaan Jordan, meetings with WHO, Ministry of Health, University of Jordan for future public health work October 2021
Media appearances, interviews, lectures, WSU town halls, commentaries and community meetings	Marcus Zervos Paul Kilgore Teena Chopra Matt Seeger	More than 150
<b>Research / Grants</b>		
A Phase 3, Randomized, Stratified, Observer-Blind, Placebo-Controlled Study to Evaluate the Efficacy, Safety, and Immunogenicity of mRNA-1273 SARS-CoV-2 Vaccine in Adults Aged 18 Years and Older	Marcus Zervos Paul Kilgore  HFH-WSU	Sponsor: Moderna – Cove Study Budget: \$12,400 per subject plus start up fees and other compensation Recruitment: n=721 Length of grant: 5 years
A Randomized, Double-blind, Placebo-Controlled Phase 3 Study to Assess the Efficacy and Safety of Ad26.COV2.S for the Prevention of SARS-CoV-2-mediated COVID-19 in Adults Aged 18 Years and Older: 1 dose study	Marcus Zervos Paul Kilgore  HFH-WSU	Sponsor: Janssen – Ensemble 1 Budget: \$12,000 per subject plus start up fees and other compensation Recruitment: n=400 Length of grant: 5 years

Appendix G CEID Activities

<p>A Randomized, Double-blind, Placebo-controlled Phase 3 Study to Assess the Efficacy and Safety of Ad26.COV2.S for the Prevention of SARS-CoV-2-mediated COVID-19 in Adults Aged 18 Years and Older: 2 dose study</p>	<p>Marcus Zervos Paul Kilgore  HFH-WSU</p>	<p>Sponsor: Janssen- Ensemble 2 Budget: \$12,000 per subject Recruitment: n=181 Length of Grant: 5 years</p>
<p>A Phase 2/3, Two-Part, Open-Label, Dose Escalation, Age De-escalation and Randomized, Observer-Blind, Placebo-Controlled Expansion Study to Evaluate the Safety, Tolerability, Reactogenicity, and Effectiveness of mRNA-1273 SARS-CoV-2 Vaccine in Healthy Children 6 Months to &lt;12 Years of Age</p>	<p>Marcus Zervos Paul Kilgore Charles Barone  HFH-WSU</p>	<p>Sponsor: Moderna- KidCove Budget: \$11,400 per subject Recruitment: n=316 Length of Grant: 5 years</p>
<p>A Randomized, Double-blind, Placebo-controlled Phase 3 Efficacy Study of an Ad26.RSV.preF-based Vaccine in the Prevention of Lower Respiratory Tract Disease Caused by RSV in Adults Aged 60 Years and Older</p>	<p>Paul Kilgore  WSU</p>	<p>Sponsor: Janssen- Evergreen Budget TDB, not yet recruiting</p>
<p>A phase II, observer-blind, randomized, controlled study to evaluate the immunogenicity and safety of a varicella vaccine at various potencies compared with Varivax, as a first dose, administered in healthy children in their second year of life</p>	<p>Paul Kilgore  WSU</p>	<p>Sponsor: GSK Budget TDB, not yet recruiting</p>



Appendix G CEID Activities

VAC31518COV2015 - Randomized, Double-blind, Phase 2 Study to Evaluate the Immunogenicity, Reactogenicity and Safety of Ad26.COV2.S.529 Administered as Booster Vaccination in Adults 18 Years of Age and Older Who Have Previously Received Primary or Booster Vaccination with Ad26.COV2.S or Primary and Booster Vaccination with BNT162b2	Paul Kilgore  WSU	Sponsor: Janssen Budget TDB, not yet recruiting
Diversity, Equity and Inclusion Driven Engagement and Education to Enhance Representation of Underserved Residents in Clinical Trials	WSU: submitted Paul Kilgore Matt Seeger Jessica Moorman (Communication)	Funding Agency: FDA Budget: \$801,000 Length of Grant: 1 year
Strengthening Healthcare Infection Prevention and Control and Improving Patient Safety in the United States	WSU: submitted	Funding Agency: US CDC Budget: \$4.7 million Length of Grant: 5 years
SeroNet	WSU: submitted	Funding Agency: NCI/CDC/NIAID Budget: \$5 million
Gun Shot-associated Wound Infections	WSU-HFH: submitted	Funding agency: Infectious Disease Society of America/Society for Healthcare Epidemiology of America Budget: \$200,000
Long-Term Effects of Disasters on Health Care Systems Serving Health Disparity Populations	WSU: submitted	Funding Agency: R01 CDC In Development
Global Emergency Response and Recovery Partner Engagement	WSU: in preparation	Funding Agency: CDC-RFA-GH22-2267 In Development
Therapeutic and prophylactic use of IgY antibodies against SARS-	WSU: submitted	In Development

CoV-2 and other emerging pathogens		
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**Scientific Publications:**

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## Thousands of Lives Can be Saved in Detroit through Prevention of Infectious Diseases

The COVID-19 pandemic has clearly demonstrated one thing: thousands of Detroiters are vulnerable and at risk of major infectious diseases.

The thousands of deaths and hospitalizations suffered by those living in the City of Detroit underscores the **tremendous urgency** we have to improve every aspect of infectious disease control and prevention.

What does this mean? It means we must:

- Get every man, woman and child in Detroit accurate, real-time information on infectious diseases that affect residents where they live, work and play.
- Provide residents with direct, easy, 24/7 facilities where they can go for disease testing.
- Give every person who is tested their results as quickly and accurately as possible and link that to an individualized Health Action Plan.
- Provide everyone in Detroit with an individual and family Health Action Plan that gives them the knowledge and tools to know the steps they can take now and, in the future, to protect themselves against the threat of killer infectious diseases.



Even as we continue to battle COVID-19, Detroiters remain at risk for killer infectious diseases that cause clusters of disease that can quickly become epidemic diseases. When an outbreak strikes any neighborhood, school or community, residents become immediately at risk for severe diseases, hospitalization and death. We all must not let our families, friends and neighbors suffer the scourge of these diseases.

In Detroit as well as across the United States, urban populations experience infectious disease outbreaks due to hepatitis A, B and C, sexually transmitted infections such as gonorrhea and syphilis, respiratory infections such as COVID-19, influenza and pneumococcal disease and foodborne illnesses such as Salmonellosis.

CEID also recognizes that we all suffer from other common conditions such as heart disease, high blood pressure, diabetes and chronic obstructive pulmonary disease that increase our risk of suffering from severe effects of infectious diseases---effects that can lead to a Detroit resident's hospitalization or death.

**The WSU Center for Emerging and Infectious Diseases (CEID) is a premier center working on the front-lines of public health, research, education and service for Detroiters' health and safety.** A primary focus of CEID is the development of community-driven, action-oriented, person-centered infectious disease prevention that empowers every man, woman and child in Detroit to protect themselves against COVID-19 and other emerging infectious diseases.

The future of Detroit's health and economic vitality lies in partnerships that leverages expertise in infectious disease detection, diagnosis, treatment and prevention with expertise from every person, family, neighborhood, community organization, congregation, private sector entity and government agency.

**No Detroiters need suffer the devastating effects and suffering that comes with infectious diseases.** The WSU CEID works hand-in-hand with Detroit to grow this partnership to fight infectious diseases each and every day.

**CEID will have three areas of focus: Creating Laboratory Facilities for disease surveillance and research, Addressing vaccine hesitance and deployment, and Education.**

**Vaccine Hesitance and Deployment: Bringing Down Barriers and Reducing Health Disparities.**

Addressing the problem of vaccine hesitancy is critical to managing infectious disease and is a key focus of Wayne State University's Center for Emerging and Infectious Diseases. A comprehensive understanding and associated communication strategy is an essential resource for the public health community to reduce vaccine hesitancy.

The widespread development and deployment of vaccines has been attributed to significant reduction of mortality and morbidity of many infectious diseases (Macdonald, 2015; Dubé, Laberge, et al, 2013). Despite strong consensus in the scientific and medical communities that vaccines are generally safe and effective, however, hesitancy in the general population has been growing. Although difficult to quantify given the varied definitions and forms of vaccine hesitancy, the advent of COVID-19 and the accompanying rapid development of vaccines, has led to diverse and conflicting vaccine-related messages within the larger communication ecosystem. Social media in particular has driven misinformation and has significantly exacerbated the problem of vaccine hesitancy (VH). VH is also contextual and associated with a specific vaccine at a specific time. It ranges on a continuum from vaccine indecision to vaccine denial with a variety of specific factors representing a distribution of acceptance that varies over time and context (Piltch-Loeb, & DiClemente, 2020).

Vaccine hesitancy, then, is a diverse set of behavioral phenomena arising from a complex set of attitudes, beliefs, and norms. It refers to delays in acceptance or refusal of vaccinations despite their general availability. Vaccine hesitancy is complex and context specific, varying across time, place, and vaccines and is influenced by factors such as complacency, convenience and confidence (MacDonald, 2015; Quinn et al., 2019). Confidence involves an assessment of the effectiveness and safety of vaccines as well as trust in the larger health care delivery system. Complacency occurs when the vaccine-preventable diseases are perceived as low risk. Convenience concerns ease of access based on availability, affordability, and adequate information about access.

These factors are rooted in cultural beliefs, personal experiences, and contextual factors, and activated through a larger communication ecosystem. The primary strategy for reducing the rate of hesitancy involves tailored, timely, and sustained messages delivered through multiple channels and credible sources.

Promoting vaccine uptake is a long-term challenge that will require understanding the attitudes and beliefs of specific groups. This includes assessing who is willing to be vaccinated, their reasons and beliefs about vaccines, and identifying who are the trusted sources of information (Machingaidze & Wiysonge, 2021). Among the important groups are the African American community, new Americans, and younger generations. In addition, vaccine mandates have revealed the hesitance of groups working within specific industries.

Understanding the attitudes and beliefs of these groups will allow for the development of specific targeted communication strategies and campaigns for addressing VH on a local level. The Wayne State University Center for Emerging and Infectious Diseases will work with local communities to understand attitudes toward

vaccines and develop messages and message strategies to address inform, education and reduce vaccine hesitancy.

Vaccine hesitancy and anti-vaccine sentiment knows no borders. Leadership and researchers of CEID at WSU are focused on identifying trends and currents in communities across Detroit, in Michigan as well as in the United States and overseas.

**Education and Outreach: Community and Institutional Capacity Strengthening to Improve Resilience and Response to Emerging and Pandemic Infectious Diseases.**

Information and education are essential tools for managing emerging infectious diseases. Education and information serve several important functions. First, there is a growing need for medical professionals, health care workers, investigators and trained lab technicians. Wayne State University has excellent programs in medicine, research, public health, nursing and pharmacology. These programs have a specific focus on public health disparities and embrace an interdisciplinary and translational approach to education. Training a diverse group of medical and health care professionals will be increasingly important to addressing public health and the ongoing risk of emerging infectious diseases.

Students and faculty in the Wayne State School of Medicine collaborate and innovate with health care systems and community partners throughout Michigan and the world to reduce health disparities by deploying state of the art therapies. The School of Medicine's location and partnerships with hospitals and clinics allow students to interact directly with patients and engage with physicians in real-world settings. The Eugene Applebaum College of Pharmacy and Health Sciences (EACPHS) educates and trains students in a broad range of health and well-being disciplines that are relevant and growing in demand locally and globally including physicians assistants and Clinical Laboratory Sciences. These and other health care fields will be in increasing demand to address emerging infectious diseases requiring integrated training programs. Microbiology labs are currently understaffed by at least 15% (ASM, Nov. 9, 2021). Covid 19 has exacerbated a critical shortage of nurses. Moreover, according to the Association of American Medical Colleges the United States could see an estimated shortage of physicians between 37,800 and 124,000 physicians by 2034. The Center for Emerging Infectious Diseases can augment existing programs by providing a specific focus and content for training.

In addition to educating medical professionals, CEID will be a source of credible and targeted information for the general public and for continuing education. Covid-19 has demonstrated that public understanding of emerging infectious diseases and mitigation strategies is critical to disease management. Misinformation and incomplete understanding has increased mortality and morbidity and extended the duration of the pandemic. Some communities have less direct access to information than others and this has exacerbated health disparities. Public education campaigns need to be targeted to specific audiences, delivered through trusted and familiar channels, consistent and sustained.

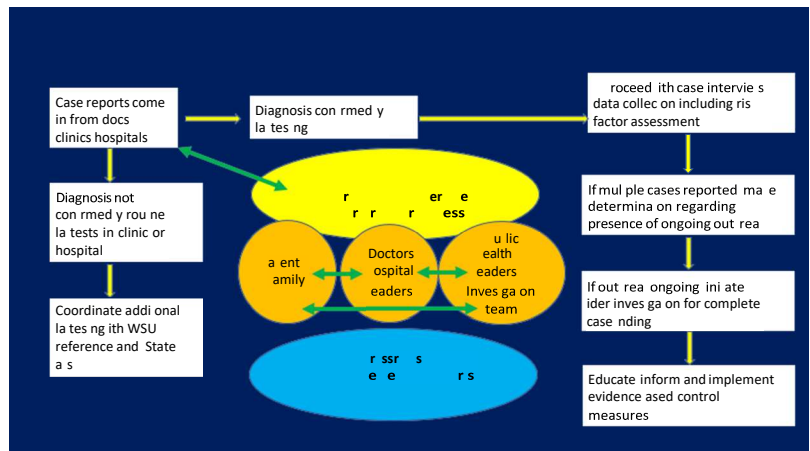
Emerging infectious diseases also create the need for just-in-time information and education. These disease outbreaks are almost always associated with high uncertainty about a range of questions including severity, transmissibility and treatment among others. Answering these questions require specialized knowledge, research expertise and the ability to translate and disseminate the information. Centers such as CEID provide a critical role as a resource for the larger public health community when that face emerging issues that create high uncertainty.

A key lesson learned from the COVID-19 pandemic is that early and sustained community engagement must be a prerequisite for ensuring that residents and community leaders have accurate, factual and updated information on what the extent of a disease threat is and how they can best protect themselves. In community after community in Detroit, across Michigan and around the U.S., information vacuums are filled quickly by those willing and able to spread misinformation. WSU has outstanding expertise pool that is standing at the ready (including faculty, staff and students) that can be leveraged to empower disadvantaged neighborhoods, families and residents of all ages. This engagement is critical to local, state and federal pandemic responses.

### Active Disease Surveillance in Communities: Public Health System Strengthening

A bedrock of public health and a time-tested public health tool are disease surveillance systems deployed to detect and control infectious diseases in communities. For many infectious and pandemic diseases, the entire population is at risk of infection, severe disease and in some cases hospitalization and death. COVID-19 provides an illustration of what can or cannot happen when communities proactively utilize case detection, diagnosis, contact tracing and active surveillance to identify disease clusters and local epidemics of disease.

- To control infectious diseases in urban and rural communities across Michigan and other parts of America, key tools that we must make available include:
- Disease education for community leaders and residents that focuses on increasing disease awareness and prevention of illness.
- Access to healthcare and diagnostic services that are within reach of at-risk residents.
- Information collection tools that leverage existing telephonic and digital technologies.
- Rapid interpretation of epidemiologic data trends using machine learning and artificial intelligence.



Regardless of income, educational background, occupation and other demographic characteristics, everyone in Detroit, across Michigan and across the United States deserves to be protected against infectious disease threats.

Coordinated, collaborative use of Active Disease Surveillance systems provides a critical bulwark that requires training, expertise, and ongoing support and enhancement to address changing needs in communities. These needs also require public health systems to be adaptable to changing conditions on the ground, in communities and across international borders. One such example is the expanding range of disease pests and insects that transmit infectious diseases to humans. Adaptability of surveillance systems will also lay the foundation for special, urgently needed projects such as serosurveys (antibody surveys) to understand the spread and immunity to COVID-19 in communities like Detroit.

The leadership and staff of the WSU Center for Infectious and Emerging Diseases (CEID) have over eight decades of combined professional experience working in public health to develop, implement, providing training for, operate and analyze data in active disease surveillance systems.

A key facet that all CEID leaders and staff recognize is the critical need for implementing and operating disease surveillance systems with community organizations and in collaboration with residents. Buy-in from residents to enhance case recognition among lay persons, case reporting by residents and local healthcare providers as well as guidance of individuals with potential infections to appropriate healthcare providers who can diagnose and treat infectious diseases. To achieve integration of surveillance systems within communities will require a proactive, novel approach and engagement of public health organizations, public health experts, community lay persons and academic research organizations with basic and applied research expertise to ensure comprehensive and sustained program implementation.

**CEID is especially well-positioned and now proceeding with executing active disease surveillance.**

### **A Regional Public Health Laboratory: Supporting the Rapid Response to Disease Outbreaks**

One tool critical to successful control of emerging and pandemic diseases are laboratories that have capacity to rapidly pivot to detect novel infectious agents. In some cases, the agents may be bacteria and in other situations, viruses, fungi or parasites. The early detection, tracking and description of pathogen strain variation across time and within populations represents a key tool to identify how epidemics are moving and evolving within populations.

Previous to the formation of the WSU CEID, the City of Detroit and surrounding counties had no qualified laboratories that existed solely to support public health organizations and health systems control the spread of dangerous pathogens. For decades, Detroit has been the epicenter for emergence of novel bacterial pathogens that are resistant to multiple antibiotics. These pathogens have resulted in thousands of deaths across the United States and are recognized as a leading public health threat around the world.

A key objective in establishing the WSU CEID is creation of a public resource that can be utilized by public health agencies, health systems and healthcare providers to identify new and emerging pathogens causing illness among Detroiters and other residents of Michigan. This laboratory is now undergoing rapid development. When fully operational, a host of laboratory scientists, technicians and public health experts around Detroit and the State of Michigan will utilize the unique diagnostic testing capabilities that include molecular diagnostics, description of drug-resistance and gene sequencing to quickly identify causative pathogens and guide public health programs to implement countermeasures for disease control.

Laboratory testing is resource-intensive and requires ongoing support of laboratory staff to ensure that technical training and know-how remains state-of-the-art. Such efforts will require continued investment in equipment, supplies, reagents and, most important, in training programs to foster the next generation of laboratory scientists who will lead future emerging and pandemic disease responses.

The WSU CEID will provide diagnostic services that support timely, comprehensive and coordinated responses to emerging and pandemic diseases. This laboratory will be equipped to:

- Take in clinical samples and process samples using standard biosafety level laboratory procedures.
- Run automated diagnostic testing using high-throughput technologies that enable strain and genetic characterization.
- Report results simultaneously to organizations or providers submitting samples as well as public health units at the local and state level.

## Appendix H CEID Govt Affairs Summary

- Support ongoing outbreak investigations conducted by public health teams at the local, state, federal and international level.
- Provide training for public health and clinical laboratories in techniques for identification of emerging and pandemic infectious diseases using rapid diagnostics and other field deployable methods.

Detroit, the State of Michigan and the United States are now at a critical juncture. We have learned hard lessons from the COVID-19 pandemic that underscore the absolutely vital need to strengthen, develop and build laboratory infrastructure as well as a cadre of trained laboratory personnel who will be ready to respond to novel disease threats that are sure to arise for decades to come.

The WSU CEID with support from local, state and federal partners will provide vitally needed emerging and other infectious disease laboratory diagnostic services that protect Detroiters and others across Michigan and the United States.