

A. COVER PAGE

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| <b>Change of Contact PD/PI:</b> N/A  |   |
| <b>Human Subjects:</b> N/A   | <b>Vertebrate Animals:</b> N/A  |
| <b>hESC:</b> N/A   | <b>Inventions/Patents:</b> None   |

## B. ACCOMPLISHMENTS

### B.1. What are the major goals of the project?

Meharry Medical College's Occupational Medicine Residency program has greatly benefited from the funding provided by NIOSH. Since the inception of the grant in 2008, NIOSH has supported the ability for the OM program to continue achieving the overarching goal of this opportunity. The mission of the residency which is to increase the number of quality, highly trained and board-certified physicians in Occupational Medicine. This goal is paramount in the ability to meet the supply needs of the U.S. workforce noting that OM physicians are uniquely qualified to ensure the health of the workers is optimized through a wide variety of preventive, acute and chronic care modalities.

Since the last funding cycle, the OM residency has been able to maintain training of the full quota of six residents per year and graduate between three to four residents annually. A total of 24 residents were enrolled in the residency program since 2016. During this time, 21 residents have successfully completed the residency program, with the remaining three on track to complete their training in July of 2022 (n=1) and June of 2023 (n=2), respectively.

During this funding cycle, the residency was required to complete their ACGME self-study. From this evaluation, the residency revised its mission and developed aims that continue to focus on the production of occupational medicine specialists, as well as ensuring the safety and wellbeing of workers in the society as a whole.

The aims that the program has outlined to meet the mission and advance the training opportunities and skills of residents are:

1. Recruit qualified physicians who exhibit a commitment to careers in occupational and environmental medicine;
2. Prepare physicians who will promote the health and safety of workers, workplaces and environments, with an emphasis on underserved populations;
3. Design residency experiences that prepare residents to prevent occupational and environmental diseases;
4. Produce physicians who can diagnose and appropriately treat occupational injuries and diseases;
5. Develop physicians who are able to administer occupational and environmental health programs for unions, industry, government, and academic entities; and are active in the development of scientific, legal, political, and ethical questions, practices and discovery of the field;
6. Identify and incorporate methods that support physician resilience and mitigate burnout;
7. Support a learning environment that is conducive to attaining the competencies necessary to be a qualified occupational medicine physician and pass the ABPM certification exam on first attempt.

These aims were directly influenced by the Total Worker Health Model. The development of residents who are able to understand the importance of how work and community influence their own health, as well as the health of workers in other industries provides an opportunity for residents to lead by example and be advocates for work environments that support worker health and productivity. The accomplishments as outlined based on the program goals from the previous grant period include:

**1. Focus on Total Worker Health (TWH) competencies through didactics, practicum rotations, and research:** The program successfully enhanced training opportunities and activities to include Total Worker Health competencies through all aspects outlined in the grant proposal. The broad scope of these activities helped to enforce the various aspects needed for consideration in managing a healthy workforce. Residents continue to be challenged to not only look at the impact of the injury or illness as it pertains to the worker's job, but also the potential safety and health concerns that arise out of the worker's presentation, the impact on the surrounding workers and community, as well as advocating for necessary changes to improve the overall health, well-being, and safety of the workers. Didactic lectures utilized to provide the foundation for understanding Total Worker Health included webinars presented through NIOSH and TWH, as well as lectures led by faculty in the residency program and elsewhere. Through the enhanced focus of improving knowledge of all areas that can impact worker health and productivity, the program has noted the positive response of residents, as they have provided feedback through intensified participation and follow up discussions on their increased understanding of the role they play as occupational medicine physicians. The

residency program was also successful in completing a feasibility study to look at implementation of Screening, Brief Intervention and Referral to Treatment (SBIRT). Working with a resident, the residency program collaborated with a long-standing partner, Middle Tennessee Occupational and Environmental Medicine (MTOEM) Clinic, to understand the barriers and opportunities to implementing this type of screening through an occupational medicine clinic. Findings from this study were presented at the American Occupational Health Conference. While work continues on utilizing this method for the identification of potentially hazardous use of various substances with emphasis on its impact in the workplace, the educational component has been fully integrated into the didactic sessions for the residents.

**2. Emergency preparedness training:** The residents were able to participate in the Emergency Preparedness practicum rotation that was set up during year 1 of this grant. Although the rotation was interrupted in 2020/2021 due to COVID, nonetheless, residents were able to participate in planning activities related to various emergency response needs in and around Nashville, TN and beyond. Residents were also introduced to other training opportunities from the Federal Emergency Management Agency (FEMA) and elsewhere that the residents continue to engage in. The rotation preceptor has reassured the residency program that the rotation will resume in the fall of 2022. The program also supported the Tennessee Department of Health's Communicable and Environmental Diseases and Emergency Preparedness Division (CEDEP) in a grant opportunity that would further enhance the learning opportunities for residents. The residency and CEDEP have enjoyed a collaborative relationship - CEDEP Director Dr. Benitez provided valuable lectures that were relevant to several occupational medicine competencies. The addition of this rotation has solidified new partnerships and opportunities for the residents and the residency program.

**3. Worker's Dignity outreach projects:** The work that was completed in partnership with Worker's Dignity included assistance with analyzing data related to hotel workers' exposure to hazardous chemicals and secondhand smoke exposure of workers, participating in advocacy functions at a community level for hotels and helping with resident project ideas during planning meetings. The program and residents gained additional ways to be involved with the health of vulnerable populations and continue to use these ideas toward the creation of other projects and advocacy opportunities. The difficulty with being maintaining partnerships with any one community organization sparked the idea to advance the purpose of this goal to include a more diverse group and greater number of organizations throughout the residents' training, and hopefully beyond. The residents utilized their Prevention Leadership Advocacy Rotation to focus on worker related topics, including those identified through Healthy People 2030, to identify partnerships as provided through a prepared list. These partnerships will be beneficial for working with different community-based organizations, and will further the reach and dissemination of these projects and support needed changes by including other occupational safety and health professionals, as deemed appropriate.

In addition to the above accomplishments that are directly related to the proposed and achieved goals of the prior submission, the residency has achieved a board pass rate of 93% since 2016 under this funding opportunity with a consistent annual level of 100% for first-time test takers over the past three years. This achievement was made possible by the enhancements to the training program, as well as the ability for residents to participate in the American College of Preventive Medicine (ACPM) board review course, as well as the OM board review that occurs at the annual American Occupational Health Conference (AOHC). From assessment of board scores and resident surveys, residents were passing the specialty portion of the exam, but there were some who had difficulty with the core part of the exam and suggested increased topics to help prepare them. The decision to include more instruction around general preventive medicine topics and board review material has proven beneficial to meeting the residency's goal of supplying highly qualified OM specialists.

## **B.2. What did you accomplish under these goals?**

Over the past year, the Occupational Medicine Residency Training Program at Meharry (OM) has graduated three residents (two in June 2019 and one in December 2019), accepted three residents for the 2019-2020 academic year (two PGY-2's and one advanced placement PGY-3), and completed the training of two more residents before the end of the academic year (one in March 2020 and the other in June 2020). The program's June 2019 graduates were successful in passing the ABPM board certification exam in Occupational and Environmental Medicine, as well as securing employment in occupational medicine. Additionally, the program, in large part due to NIOSH TPG funding,

has maintained its allotted ACGME complement of six residents annually for the seventh year. The program was also successful in recruiting more highly qualified residents for the 2020-2021 academic year (two PGY-2's and two advanced placement PGY-3) and 2021-2022 academic year (two PGY-2's). While the two advanced placement residents from 2020-2021 academic year graduated in 2021 and successfully secured occupational medicine job, the remaining two residents completed their training in June/July, 2022.

It has been a long-standing desire and noted improvement area for the program to have its own on-site occupational medicine clinic. While a development plan was submitted last year that discussed the benefits of implementing this clinic, there has not been recent feedback that would explain the planned action from the prior year's submission. The program continues to be hopeful that there will be support from the institution to engage in the development of this clinic, however the recent strategic restructuring of several positions within Meharry leadership (Dean for the School of Medicine; Dean for the School of Graduate Studies and Research; Vice President of Research and Innovation; Vice President of Clinical Affairs) suggest that there are higher priorities at this time. The program does not view the above changes as negative and believes that this restructuring may be beneficial to the program and institution.

While the program has been continuing to succeed with the proposed plan from this funding opportunity, specific details related to each activity is included below following the format provided as:

- 1) Major activities
- 2) Specific Objectives
- 3) Significant results, including major findings, developments, or conclusions (both positive and negative)
- 4) Key outcomes or other achievements

Didactics:

1) Topics: Faculty led discussions - Pregnancy and Postpartum in the Workplace; Management of Bloodborne Pathogen Exposures; Public Health Monitoring & Evaluation; Substance Abuse; Basics of Disease Control: Ebola Virus Disease as a Case Study; Radiation/Radioactive Exposures; Workplace Drug Testing: The MRO; Aerospace Medicine; Workplace Wellness and Modifiable Healthy Lifestyle Behaviors; Occupational Cancers; Prevention and Control; Occupational Lung Diseases; Legal and Ethical Issues in Health Services Management; NIOSH Total Worker Health webinars - Where Exposure Meets Sensor Technologies: A Look at the Opportunities and Complexities; Applying Dissemination and Implementation Science to Total Worker Health Research and Practice: What We Need to Know; and modules – Medscape's What's New in Pre-exposure prophylaxis; Institute for Healthcare Improvement – Introduction to Healthcare Leadership.

Additionally, residents participated in a worksite visit to the Jack Daniels plant in Lynchburg, TN. This worksite activity has been a staple within the program for over 10 years. Resident were able to see the several upgrades to their workplace health clinic to include programs that are specific to employee health and wellness within and outside of the workplace. The residents were unable to participate in another worksite visit to the Nashville Zoo due to COVID.

2) The broad scope of these activities helps to enforce the various aspects needed for consideration in managing a healthy workforce. Residents are challenged to not only look at the impact of the injury or illness as it pertains to the worker's job, but also the potential safety and health concerns that arise out of the worker's presentation, the impact on the surrounding workers and community, as well as advocating for necessary changes to improve the overall health, well-being, and safety of the workers.

3) Residents engage in longitudinal projects that help to engage their ability to understand what is meant by evidence-based medicine for a variety of occupational and/or environmental health topics. Through the enhanced focus of improving knowledge of all areas that can impact worker health and productivity, the program has noted the positive response of residents as they have provided feedback through intensified participation and follow up discussions on their increased understanding of the role they play as occupational medicine physicians.

4) Major outcomes from the above objective include improving the knowledge of entering occupational medicine physicians on the holistic approach needed for worker health and productivity.

#### Emergency Preparedness rotation:

- 1) Emergency Preparedness rotation within the Communicable and Environmental Diseases and Emergency Preparedness (CEDEP) division of the Department of Health in Tennessee. The residents participate in a variety of activities that include: policy development, FEMA modules, committee meetings, and other activities as available.
- 2) The exposure provided by this rotation helps to meet the milestones and competencies as required by ACGME.
- 3) 100% of PGY-3 residents continue to participate in the month-long rotation. Dr. Benitez has continued to provide opportunities that benefit resident training, as well as the program. Although information on the outcome of funding for the CEDEP division is not known, the program provided support of the application for the division to increase activity with the program as it relates to environmental epidemiology with the proposed application to include: 1) environmental epidemiology speakers to be included in didactic sessions; 2) having residents work on specific projects with the environmental epidemiology staff; and 3) help with environmental assessments in the field. These activities are not inclusive of all ways CEDEP and the residency program could interact and provide additional training to the residents.
- 4) The major outcome from this activity is evident in the desire for CEDEP to seek out additional collaborations with the residency and the residents. The work that has been conducted thus far has helped to forge new possible partnerships that will only continue to enhance the training of the residents.

#### Local and National Conference participation:

- 1) The program continues to have 100% participation in submission of abstracts to Meharry's Research Day and the American Occupational Health Conference (AOHC).
- 2) The specific objective of this activity is to disseminate resident research projects stemming from the resident's work on their Prevention Leadership Advocacy Rotation (PLAR), thesis, and/or other investigations.
- 3) With the current resident structure, only one resident is required to present at Meharry's Research Day symposium. The poster presentation occurred on September 29, 2021, with the resident winning first place under MSPH and residents category. For the American Occupational Health Conference, both PGY-3 residents had their abstracts accepted but only one resident presented her poster in May, 2022. The topics included "Awareness, Exposure and Access of Medical Residents to Employee Assistance Programs: A Cross Sectional Study" and "Can reminder emails increase pre-placement evaluation compliance among incoming first-year dental students?" Other residents engaged in research activities that support requirements for Hepatitis A vaccination in food handlers; medical director training requirements to serve in local health departments; health and wellness considerations for residents; return to work outcomes by varied treatment modalities for upper extremity traumas, and assessing modifiable health behaviors and chronic disease of transportation workers. These topics continue to encourage the work necessary to improve the total health and well-being of workers and the community.
- 4) Residents have been more greatly involved in producing manuscripts for publication. The program views this as a major achievement, as residents have been engaged in dissemination of their work with the added intent of increasing awareness of the inequities that continue to be faced by workers.

#### Community Outreach

- 1) Prevention Leadership Advocacy Rotation projects have provided an avenue for residents to engage with community organizations.
- 2) Residents work on projects that utilize support of literature to advocate for necessary changes across a wide array of concerns as it pertains to occupational and/or environmental topics.
- 3) The residents continue to engage in health fairs sponsored through either the institution or local community organizations. In addition, the program continues to reach out to community organizations to partner with for the purpose of engaging with underserved workers. In the meantime, the residents work on projects related to improving worker and community health parameters. One project includes exploring the need for policies to improve worker health in the fast-food industry by examining requirements for Hepatitis A vaccination. In consideration of recent Hepatitis A outbreaks in Tennessee, residents have taken on the approach of exploring the health effects of requiring this vaccination in fast food workers to prevent worker acquisition and transmission of this virus. They are currently engaging in review of current literature on this topic and conversations with the Tennessee Department of Health to

understand existing policies related to this topic. Another project focuses on the need for improved policies related to hands-free while driving laws in Tennessee. Tennessee only recently enacted a hands-free law in 2019, however, through policy and literature review of recommended practices to decrease injuries due to distracted driving, the residents are working on improving the provisions of the current policy to be in line with known evidence.

4) Dissemination of these projects through publications, poster presentations, and community advocacy groups has created several paths for continuing collaborations for the residents and the program. The work done in one of the PLAR projects generated interest from another organization. That organization requested continued work by a recent graduate on the work done during her training. This is a major achievement as it indicates appreciation of the innovative and engaging topics being undertaken by the residents to improve policies that directly and indirectly impact worker well-being and productivity.

#### Next Steps

The goals of this grant have been implemented and the program works to maintain these goals by continuing to have residents participate in training, didactic, and scholarly projects that will support their ability to engage in activities that improve worker health, well-being and productivity.

### **B.3. Competitive Revisions/Administrative Supplements**

N/A

### **B.4. What opportunities for training and professional development did the project provide?**

**Kenya Miles, MD, MPH** - Dr. Miles entered the program having already completed her MSPH degree prior to starting medical school. Due to American Board of Preventive Medicine (ABPM) and Accreditation Council of Graduate Medical Education (ACGME) requirements for Occupational Medicine residency training, Dr. Miles completed coursework in Occupational Health II, Occupational Toxicology, and Industrial Hygiene towards the end of the 2016-2017 grant cycle. Dr. O'Hara served as Dr. Miles' mentor and meets with her on an almost monthly basis to ensure her success of completing all requirements of the residency program. Dr. Miles' success during her training include a successful abstract submission to the Tennessee Public Health Association (TPHA) conference in September 2017 for a poster presentation on migrant farmworker food insecurity, an abstract submission for the American Occupational Health Conference (AOHC, April 2018) on migrant farmworker knowledge and use of integrative health modalities for treating illnesses and injuries, a manuscript on the aforementioned Food Insecurity topic submitted to the Journal of Agromedicine (February 2018), and a manuscript on the aforementioned topic related to integrative medicine (expected submission in May 2018). The work for these publications occurred during her NIOSH supported Agricultural Health rotation in Greene County, NC under the advisement of Thomas Arcury, PhD (Wake Forest University) and Doug Smith (Greene County Health Care, Inc). Additionally, Dr. Miles completed her Emergency Preparedness rotation with the Tennessee Department of Health in March 2018. She completed her Health Administration rotation at General Motors. Dr. Miles completed a quality improvement project on a curriculum enhancement project that would improve use and referral of dental patients to tobacco cessation resources. Her work in this area has forged an ongoing relationship between the Division of Occupational and Preventive Medicine and the School of Dentistry. Dr. Miles completed all requirements of the residency by June 30, 2018. She is working as an occupational medicine physician.

**Ifeoma Ogbonna, MD** – Dr. Ogbonna completed her MSPH thesis requirement. Her project titled “*Assessing the Knowledge, Attitude and Preventive Practices of Tuberculosis among Healthcare Workers and Ancillary Staff in an Underserved Medical Institution.*” She maintained her interest in tuberculosis through her quality improvement project and worked to streamline practices related to N95 respirator fit testing for dental students and residents to provide them with the same protective measures as physician trainees considering their exposure to the same underserved population. Dr. Ogbonna completed her residency training August 31, 2018 due to an approved residency extension. She completed her required 24 months of training in August. Dr. Ogbonna completed her

Emergency Preparedness rotation in February 2018 and her Health Admin (Student and Employee Health at Meharry) and Ag Health rotations in April and June 2018, respectively.

**Sylvia Onyensoh, MD, JD** – Dr. Onyensoh completed her MSPH coursework and thesis. She has a great interest in environmental issues related to health and conducted a survey related to air quality perceptions and medical conditions of residents near a landfill for her thesis requirement. She submitted abstracts to the Western Occupational and Environmental Medical Association (WOEMA) conference and the TPHA conference related to aspects of the environmental impact of food waste. Her abstracts to both of these conferences were accepted, but unfortunately they occurred at the same time. Dr. Onyensoh elected to attend the WOEMA conference to present her poster. She submitted her thesis work abstract to the AOHC. Dr. Onyensoh is mentored by Dr. Etling, alongside close mentorship by Drs. Aliyu and O’Hara to ensure that she is able to meet all requirements set forth in the residency. She completed her Ag Health and Emergency Preparedness rotations in September and November 2017, respectively and completed her Health Admin rotation (Student and Employee Health at Meharry) in May 2018.

**Erik Benitez, MD** – Dr. Benitez completed all of his practicum requirements and MSPH thesis in June 2019. He completed his thesis on Return-to-Work Disparities in Back Injuries among Minority Populations. He submitted an abstract that received first place award under the public health section. He was spotlighted on “Progreso y Bienestar” (Progress and Well-being) hosted through Progreso Community Center that provides health information to members of the Hispanic and Latinx communities in Nashville, TN. He worked with Dr. Aliyu, his assigned mentor, and completed rotations in Agricultural Health, Health Administration at General Motors, as well as Emergency Preparedness. Dr. Benitez received support from this training grant because of the rotations that he completed, as well as for his MSPH tuition. He is currently working as an occupational medicine physician at Concentra.

**Xuan-Lan Griffith, MD, MPH** – Dr. Griffith completed her practicum requirements and research on Workplace Violence in Health Care in June 2019. She worked closely with administrative personnel at the Bureau of Worker’s Compensation, as well as Adjunct Faculty, Dr. Talmage, to analyze over 7,000 worker compensation claims to determine the association of workplace violence with claims by healthcare setting, specialty, and role. Dr. Griffith completed her Occupational Safety and Health Administration (OSHA) rotation through Federal OSHA and provided a presentation at the conclusion of her rotation on Potato Processing and Associated Lung Infections. Dr. Griffith performed exceedingly well in all of her rotations. She joined the Lehigh Valley Health Network as an occupational medicine medical director.

**Muthu Sivasankaran, MD** – Dr. Sivasankaran completed all practicum requirements and his MSPH thesis June 2019. Dr. Sivasankaran’s abstract on knowledge, acceptance, and perceived confidence of opioids and prescribing practices among physician trainees was presented at AOHC. He also investigated the current requirements of medical and dental accrediting entities and the need for an organized curriculum on opioid education and prescribing practices. Dr. Sivasankaran’s review of literature supported the development of an educational program requirement to combat the current opioid epidemic. Dr. Aliyu served as Dr. Sivasankaran’s mentor and worked closely with him on the projects. Dr. Sivasankaran is currently working as an attending physician with Virtua Urgent Care in New Jersey.

**Jasmine John, MD, MSPH** – Dr. John was an advanced placement resident who was accepted into the PGY-3 year in September 2018. She completed her research on migrant farmworker use and access to health care since the adoption of the Patient Protection and Affordable Care Act and submitted a manuscript to the Journal of Agricultural Safety and Health. She presented her research at the American Occupational Health Conference in May 2019. Dr. John completed a quality improvement project on adherence to the TB screening program at Meharry. Dr. John was instrumental in revising Meharry’s TB policy to meet new recommendations. Dr. O’Hara served as her mentor during her training in occupational medicine. Dr. John completed her residency training in March 2020 and is currently working as an occupational medicine physician in Green Bay, Wisconsin.

**Teresa Renee Williams, MD, MSPH** – Dr. Williams was an advanced placement resident who was accepted into the PGY-3 year in October 2018. She came to the program after completing her Preventive Medicine training at Meharry. Dr. Williams presented her research on piloting the Screening, Brief Intervention, and Referral model for alcohol use in an occupational clinic setting at the American Occupational Health Conference in May 2019. Dr. Williams

completed her quality improvement project on adherence rates for immunizations in healthcare trainees and workers. She authored a policy paper out of this work to improve adherence and influence compliance of the healthcare workforce in protecting their health and the health of their patients. Dr. Williams met all competencies and training requirements and successfully completed the residency training program in December 2019. Dr. Aliyu served as her mentor during her training. She is currently working at Parkview occupational medicine clinic, Fort Wayne, Indiana.

**Gregory Dishan Bouyer, MD** – Dr. Bouyer was a regular placement resident. He came to the Occupational Medicine Residency after prior training in surgery and nuclear medicine. He completed most of his practicum rotations, but due to COVID there were a few rotations that required re-routing of services. Dr. Bouyer completed his Agricultural Health and Emergency Preparedness rotations in July and September 2019. Dr. Bouyer provided direct support to the COVID response at Meharry through the Employee Health Clinic. Although he completed his practicum rotations by June 30, 2020, he did not complete his MSPH thesis requirements until September 30, 2020. September 30, 2020 is therefore his official end date of residency training. His project, variations in upper extremity trauma management and return to work outcomes, was accepted for poster presentation at the American Occupational Health Conference in May 2020. Unfortunately, due to COVID, Dr. Bouyer was unable to present his poster. His quality improvement project in patient satisfaction showed that lack of access diminishes the level of satisfaction experienced by patients. He actively worked with the medical group management team to understand potential services that could help with this situation. Dr. O’Hara served as his mentor. Dr. Bouyer is currently working with Kaiser Permanente as an occupational medicine physician.

**Ghino Francois, MD, MSPH** – Dr. Francois was an advanced placement resident who was accepted into the PGY-3 year in July 2019. He came to the program after completing his Preventive Medicine training at Meharry. Dr. Francois worked on research related to transportation workers and lifestyle factors contributing to chronic medical conditions. He submitted an abstract for poster consideration to the American Occupational Health Conference in May 2020. Dr. Aliyu served as his mentor during his training. He is currently working as an occupational physician in Kingsport, Tennessee.

**Amita Dhatrika, MD** – Dr. Dhatrika joined the residency in July 2019 after completing a Family Medicine residency. She diligently completed her public health courses and residency. She was a leader among her cohort. Dr. Dhatrika successfully completed her continuity clinic requirements at Middle Tennessee Occupational and Environmental Medicine, Inc and Concentra. Her research on Hepatitis A vaccination in food handlers focusing on workers in the fast-food industry was accepted for AOHC 2021 poster presentation. Dr. Aliyu served as her mentor. She is working with Kadlec Occupational Medicine in Kennewick, Washington.

**Emily Hanna, MD, MPH** – Dr. Hanna started the residency in July 2019 after completing a Preventive Medicine residency at University of North Carolina. She completed her public health degree prior to starting the residency and therefore engaged in rotations immediately gaining knowledge on workplace injuries and illnesses and their effect on the overall health and productivity of the worker and the community. Dr. Hanna completed all required courses for board certification and residency completion (Occupational Health I and II, Industrial Hygiene, and Occupational Toxicology) which the program supported through the funding provided. Her research was on understanding the training requirements necessary for medical directors in local health departments, as well as exploring burnout in healthcare providers. Her work was accepted for AOHC 2021 poster presentation. Dr. O’Hara served as her mentor. She works as an occupational physician in Tennessee.

**Bolanle Ogunde, MD, MPH** – Dr. Ogunde started the occupational medicine residency in July 2020 after completing a Preventive Medicine residency in the same institution. Dr. Ogunde was accepted into the occupational medicine residency as an advanced standing resident. She completed 15 months of practicum experiences within the residency to ensure all competencies were met. She was engaged in clinical and other rotations that support her capacity to understand work related illnesses and injuries, and how these impact the overall health and productivity of the workers and their communities. In addition to her public health degree, Dr. Ogunde enrolled in the necessary post graduate courses for board certification in Occupational Medicine, including Occupational Health I & II, Industrial Hygiene and Occupational Toxicology, which the program supported through the funding provided. Her project on

food insecurity in farmworker households in the United States was accepted for AOHC 2021 poster presentation. Dr. Aliyu served as her mentor. She is currently the program director for the occupational medicine residency program at Meharry Medical College.

**Olatunde Oso, MD, MSPH** – Dr. Oso started the occupational medicine residency in October 2020 after completing a Preventive Medicine residency in the same institution. Dr. Oso was one of two residents accepted as an advanced standing resident that year. He completed 15 months to ensure all specialty competencies were met. He participated in clinical and non-clinical rotations that support his capacity to understand work related illnesses and injuries. In addition to his previously attained public health degree, Dr. Oso enrolled in the graduate courses required for board certification in Occupational Medicine, including Occupational Health I & II, Industrial Hygiene and Occupational Toxicology. These courses were supported through the funding provided by this grant. He submitted an abstract on COVID vaccine rates and hesitancy among healthcare workers to AOHC 2021. Dr. Aliyu served as his mentor. He is currently working locum tenens in the Middle Tennessee area.

**Ijeoma Ohadugha, MD** – Dr. Ohadugha is a PGY-3 resident who joined the program in July 2020. She completed her residency training on June 30, 2022. Dr. Ohadugha's project titled "Awareness, Exposure and Access of Medical Residents to Employee Assistance Programs- A Cross-Sectional Study" was presented at the American Occupational Health Conference in May 2022, and to the medical resident advocacy group at Meharry, the group that will benefit most from this project. Dr. Ohadugha completed a quality improvement project on prevention and maintenance of elevated blood pressure among TN drivers applying for DOT medical cards. Her project addressed the common complaints by patients of lack of knowledge of common causes of elevated blood pressure readings. Her intervention involved the use of informational flyers to educate drivers regarding risk factors that could elevate their blood pressure and a resting method for blood pressure maintenance among patients with elevated blood pressure. Dr. Ohadugha completed her Occupational Safety and Health Administration rotation through federal OSHA and gave an informative presentation on different topics. She was an active ACOEM member. Dr. Aliyu and Dr. Ogunde served as her mentors. Dr. Ohadugha will join the Veterans Affairs Medical Center in Nevada as an Occupational Medicine physician after her board examination in October.

**Tamera Means, MD** – Dr. Means is a PGY-3 resident who joined the program in August 2020. She is on track to complete her residency training program in July 2022. Dr. Means presented her quality improvement project during Meharry Research Day 2021 and won first place. She also did a poster presentation at the Western Occupational Health Conference (WOHC) 2021 and won a scholarship award. Dr. Means' abstract on reminder emails and pre-placement evaluation compliance evaluation among incoming first year dental students was accepted for AOHC 2022. In addition, Dr. Means completed her Occupational Safety and Health Administration rotation through federal OSHA and gave a presentation at the conclusion of her rotation on improving the processing of OSHA's Noise Induced Hearing Loss (NIHL) enforcement cases by improving training protocols. Her project will help to improve the process involved in evaluating workers for NIHL. Dr. Aliyu served as her mentor and works closely with her. She secured an occupational medicine job at Vanderbilt University in Tennessee.

**Prince Ejindu, MD**- Dr. Ejindu is a PGY-2 resident who started the residency in July 2021 after completing a transitional year. He has been diligently completing his public health courses and participates in continuity clinic requirements on Fridays at Concentra. He has started his quality improvement project on x-waiver certification for medical residents as well as creating a curriculum for addiction medicine as part of his PLAR project. Dr. Ogunde serves as his mentor.

**Lakshmanasamy Somasundaram, MD** - Dr. Somasundaram is a PGY-2 resident who joined the program in July 2021 after residency training in Anesthesiology. He has been diligently completing his public health courses and participates in continuity clinic requirements on Fridays at Middle Tennessee Occupational and Environmental Medicine, Inc. He is working with another resident on a quality improvement project on x-waiver certification for medical residents as well as creating a curriculum for addiction medicine as part of his PLAR project. Dr. Aliyu serves as his mentor.

**B.5. How did you disseminate the results to communities of interest?**

Dissemination of the work being completed within the residency program such as the quality improvement projects and Prevention Leadership Advocacy Rotation (PLAR) projects continue to occur through the submission of abstracts to local, regional, and national conferences. The tasks require residents, with close guidance by faculty, to produce final projects of publishable quality. This year, the PGY-3 residents received invitations to present at the American Occupational Health Conference (AOHC), which has been the case for over ten years. While not all submitted abstracts have been selected every year, the program does have a ~90% abstract acceptance rate. The participation of the residents in these poster or oral sessions during AOHC has been overwhelmingly positive as it builds awareness of the research being conducted, informs potential inequities in practice habits, provides opportunities for residents to engage in meaningful discussions with policy leaders, and increases the ability for residents to advocate for needed changes in healthcare services for workers and the overall community.

**B.6 - What do you plan to do during the next reporting period to accomplish the goals?**

The goals of this grant have been implemented and the program works to maintain these goals by continuing to have residents participate in training, didactics, and scholarly projects that will support their ability to engage in activities that improve worker health, well-being and productivity. The following plan will support the ability for the program to continue meeting the goals of the grant:

- Continue engaging department leadership for faculty hiring needs
- Monthly meetings to discuss program improvements and considerations as identified in the ACGME self-study (every fourth Wednesday)
- Complete resident evaluations and binder reviews
- Reach out to rotation directors for prime months to have resident trainees
- Request information from residents of desired leave periods
- Engage community partners for 2022-2023 opportunities
- Send annual and graduate surveys as part of our continuous quality improvement program
- Complete the 2022-2023 rotation calendar
- Update xTrain to terminate graduate appointment
- Identify needed lectures and schedule faculty speakers for the first semester of the 2022-2023 academic year

## C. PRODUCTS

### C.1. Publications, conference papers, and presentations

Accomplishments recognized by the residency for our trainees and faculty throughout this funding period include scholarly work by each resident, and in some cases multiple presentations and/or articles. Note: **Name** – resident  
**Name** – faculty

1. **Patnaik S**, Tejada F, Aliyu MH, Ekundayo J, O'Hara H. Second Hand Smoke in the Workplace. CDC Minority Public Health Ethics Forum. April 2016.
2. **Urankar R**, Aliyu MH, O'Hara H. Worksite Wellness Programs (WWPs): Benefits and Barriers. CDC Minority Public Health Ethics Forum. April 2016.
3. **Fawibe O**, Aliyu MH, Ekundayo J, Areola S, O'Hara H. Association of Air Quality Index with Hospital Admissions due to Respiratory Conditions in Davidson County, Tennessee. AOHC, April 2016.
4. **Urankar R**, Johnson R, Aliyu M, O'Hara H. HIV Awareness in Long Distance Truck Drivers. AOHC, April 2016.
5. **Gerges M**, Arcury TA, Chakrabarty S, O'Hara H. Health care utilization by migrant farm workers in the United States: Barriers and Challenges. AOHC, April 2016.
6. **Patnaik S**, Nnanda M, Tejada F, Aliyu M, O'Hara H. Secondhand Smoke in the Workplace. Journal of Healthcare Science and the Humanities. VI (2), 2016: 109-121.
7. Ziegler C, Morelli V, **Fawibe O**. Climate Change and Underserved Communities. Primary Care: Clinics in Office Practice, 44(1); March 2017, pp. 171 – 184.
8. Ziegler C, Morelli V, **Fawibe O**. Environmental Justice and Underserved Communities. Primary Care: Clinics in Office Practice, 44(1); March 2017, pp. 155 – 170.
9. O'Hara H, Dunlap J. Implementing an SBIRT Curriculum Enhancement Program for Substance Use Disorders at an HBCU Teaching Hospital. SBM, San Diego, CA, March 30, 2017.
10. **Egbuji A**, Aliyu M, O'Hara H. The Flu Shot Clinic Program at Meharry Medical College Employee Health Clinic: A Quality Improvement Project. AOHC 2017.
11. **Juene J**, Aliyu M, O'Hara H. Need for Federal Motor Carrier Safety Administration Guidelines on Obstructive Sleep Apnea. AOHC 2017.
12. **Patnaik S**, Aliyu M, O'Hara H. Knowledge, Attitude, and Perception about the Zika Virus Disease at a Historically Black College or University. AOHC 2017.
13. O'Hara H, ACOEM TED Talk: OEM Supports Expectant and Postpartum Women in the Workplace – Better than just about anyone! American Occupational Health Conference (AOHC), Denver, CO, April 24, 2017.
14. **John J**, O'Hara H, Chen CK. Validating Physician Competency Based on Medical School Curriculum Assessment. Western Occupational Health Conference, Maui, Hawaii, September 2017.
15. **Onyensoh S**, Aliyu M, Etling M, O'Hara H. A Systematic Review of Food Waste and Related Policies as an Environmental Problem in the U.S. and the World. Western Occupational Health Conference, Maui, Hawaii, September 2017.
16. **Miles K**, Quandt S, O'Hara H. Practicing Effective Diabetes Dietary Self-Management: Issues For Migrant Farmworkers. Tennessee Public Health Association Conference, Franklin, TN, September 2017.
17. **Ogbonna I**, O'Hara H, Ekundayo J, Aliyu M. TB Knowledge, Attitude and Preventive Practices among Healthcare Workers and Ancillary Staff in an Underserved Medical Institution. American Occupational Health Conference, New Orleans, LA, April 2018.
18. **Miles K**, O'Hara H, Ferguson K, Chen H, Arcury T. Farmworkers Knowledge and Use of Integrative Health Modalities. American Occupational Health Conference, New Orleans, LA, April 2018.
19. **Onyensoh S**, Areola S, Tabatabai M, Washington W, O'Hara H. Exploring the Health and Environmental Effects of Living Near an MSW Landfill Given Current U.S. EPA Standards. American Occupational Health Conference, New Orleans, LA, April 2018.

20. Quandt SA, Groeschel-Johnson A, Kinzer HT, Jensen A, **Miles K**, O'Hara H, Chen H, Arcury TA. Migrant Farmworker Nutritional Strategies: Implications for Diabetes Management. *J Agromedicine*. 2018; 23(4):347-354.
21. O'Hara H. Pilot Project B: Curriculum Enhancement Program for SBIRT for Substance-Related Problems. Drug, Brain and Behavior Mini-Symposium. Meharry Medical College, Nashville, TN, April 25, 2018
22. O'Hara H, Morelli V (2019). Chapter 7 - ACES: Screening for Adverse Childhood Experiences. Editor: Morelli,V. (Ed. 1). *Adolescent Health Screening: an Update in the Age of Big Data*, (pp. 75-82). Elsevier.
23. Arcury TA, Furgurson KF, O'Hara HM, **Miles K**, Chen H, Laurienti PJ. Conventional and Complementary Therapy Use among Mexican Farmworkers in North Carolina: Applying the I-CAM-Q. *J Agromedicine*. 2019 Jul; 24(3):257-267. Epub 2019 Mar 22. PubMed PMID: 30860961; PubMed Central PMCID: PMC6570560.
24. **Griffith X**, Summay R, O'Hara H. Workplace Violence Against Healthcare Workers: An Analysis of Worker's Compensation Claims in the State of Tennessee. American Occupational Health Conference, Anaheim, CA, April 2019.
25. **John J**, O'Hara H. Health Care Utilization among U.S. Farmworkers: Pre & Post Passage of the Patient Protection and Affordable Care Act of 2010. American Occupational Health Conference, Anaheim, CA, April 2019.
26. **Williams TR**, O'Hara H. Screening, Brief Intervention and Referral to Treatment (SBIRT) in an Occupational Healthcare Setting: A Feasibility Study. American Occupational Health Conference, Anaheim, CA, April 2019.
27. **Sivasankaran M**, Menakaya K, O'Hara H. Knowledge and Beliefs of Pain Management and Opioid Education among Healthcare Providers in Training. American Occupational Health Conference, Anaheim, CA, April 2019.
28. **Sivasankaran M**, O'Hara H. Support for Improved Pain Education Curriculum among Healthcare Providers in Training. American Occupational Health Conference, Anaheim, CA, April 2019.
29. O'Hara H. Wellness in Mental Health Providers. 10<sup>th</sup> Annual Lloyd C. Elam Symposium. Meharry Medical College, Nashville, TN, May 16, 2019.
30. O'Hara H, Physician Burnout – Transform the Culture, American College of Preventive Medicine Annual Conference (ACPM), Pittsburgh, PA, May 22, 2019
31. **Ogunde BO**, O'Hara H, Aliyu MH, Etling M. Polyfluoroalkyl Chemicals Exposure and Neurobehavioral Development: Effect Modification by Body Mass Index, American College of Preventive Medicine Annual Conference (ACPM), Pittsburgh, May 22, 2019
32. **Francois G**, O'Hara H, Aliyu MH Lifestyle Factors in the Workplace, American College of Occupational and Environmental Medicine Annual Conference (AOHC) 2020\*
33. **Bouyer GD**, Aliyu HM, O'Hara H Upper Extremity Injury Treatment Differences and Return to Work Outcomes, AOHC 2020\*

\*These residents submitted and had accepted presentations for AOHC 2020, but due to COVID-19 were unable to participate.

33. **Dhatrika A**, O'Hara H, Kalliny K, Aliyu MH. Hepatitis A vaccination in food handlers focusing on workers in the fast food industry. American College of Occupational and Environmental Medicine Annual Conference, 2021.
34. **Hanna E**, Aliyu MH, O'Hara H, Huffman M, Kalliny K Physician Wellness and Burnout at an HBCU. American College of Occupational and Environmental Medicine Annual Conference (AOHC), 2021.
35. **Ogunde BO**, O'Hara H, Aliyu HM. Food Insecurity in Farmworker Households in the United States. American College of Occupational and Environmental Medicine Annual Conference (AOHC), 2021.
36. **Ohadugha I**, Ogunde BO, Aliyu MH, Rolando L, Nobis A, Kendall J. Awareness, Exposure and Access of Medical Residents to Employee Assistance Programs: A Cross-Sectional Study. American College of Occupational and Environmental Medicine Annual Conference (AOHC), May, 2022.
37. **Means T**, Aliyu MH. Can reminder emails increase pre-placement compliance among first-year dental students? The 65th Annual Student Research Day at Meharry Medical College. September, 2021.

38. **Means T**, **Aliyu MH**. Can remainder emails increase pre-placement compliance among first-year dental students? Western Occupational Health Conference (WOHC), 2021 and AOHC, 2022.
39. Chakkalakal RJ, Connor LR, Rolando LA, Huang Y, Byrne DW, Awalt BM, McGown PW, **Aliyu MH**, Yarbrough MI. Putting the National Diabetes Prevention Program to Work: Predictors of Achieving Weight-Loss Goals in an Employee Population. *Prev Chronic Dis*. 2019 Sep 12; 16: E125. doi: 10.5888/pcd16.190053.
40. Iliyasu Z, Galadanci HS, Emokpae P, Amole TG, Nass N, **Aliyu MH**. Predictors of Exclusive Breastfeeding Among Health Care Workers in Urban Kano, Nigeria. *J Obstet Gynecol Neonatal Nurs*. 2019 Jul;48(4):433-444. doi: 10.1016/j.jogn.2019.04.285.
41. Arcury TA, Furgurson KF, **O'Hara HM**, Miles K, Chen H, Laurienti PJ. Conventional and Complementary Therapy Use among Mexican Farmworkers in North Carolina: Applying the I-CAM-Q. *J Agromedicine*. 2019 Jul; 24(3):257-267. doi: 10.1080/1059924X.2019.1592049. Epub 2019 Mar 22.
42. Iliyasu BZ, Amole TG, Galadanci HS, Abdullahi SS, Iliyasu Z, **Aliyu MH**. Occupational Exposure to Blood and Body Fluids and Knowledge of HIV Post-Exposure Prophylaxis among Medical and Allied Health Students in Northern Nigeria. *Int J Occup Environ Med*. 2020 Oct; 11(4):196-209. doi: 10.34172/ijoem.2020.2094.
43. Iliyasu Z, Galadanci HS, Hassan-Hanga F, Abdulrahman Z, Tsiga FI, Marryshow SE, **Aliyu MH**. Healthcare Workers' Knowledge of HIV-Exposed Infant Feeding Options and Infant Feeding Counseling Practice in Northern Nigeria. *Curr HIV Res*. 2020; 18(1):29-40. doi: 10.2174/1570162X18666191223114657.
44. Iliyasu BZ, Amole TG, Galadanci HS, Abdullahi SS, Iliyasu Z, **Aliyu MH**. Occupational Exposure to Blood and Body Fluids and Knowledge of HIV Post-Exposure Prophylaxis among Medical and Allied Health Students in Northern Nigeria. *Int J Occup Environ Med*. 2020 Oct;11(4):196-209. doi: 10.34172/ijoem.2020.2094.
45. Iliyasu Z, Hassan-Hanga F, Ajuji SI, Bello MM, Abdulkadir SS, Nass NS, Salihu HM, **Aliyu MH**. Correlates of Health Care Workers' Knowledge and HIV-Exposed Infant Immunization Counseling Practice in Northern Nigeria. *Int J MCH AIDS*. 2021; 10(1):55-65. doi: 10.21106/ijma.432.
46. Audet CM, Shepherd BE, **Aliyu MH**, Moshabela M, Pettapiece-Phillips MJ, Wagner RG. Healer-led vs. clinician-led training to improve personal protective equipment use among traditional healers in South Africa: a randomized controlled trial protocol. *Glob Health Action*. 2021 Jan 1; 14(1):1898131. Doi: 10.1080/16549716.2021.1898131.
47. Iliyasu Z, Hassan-Hanga F, Ajuji SI, Bello MM, Abdulkadir SS, Nass NS, Salihu HM, **Aliyu MH**. Correlates of Health Care Workers' Knowledge and HIV-Exposed Infant Immunization Counseling Practice in Northern Nigeria. *Int J MCH AIDS*. 2021; 10(1):55-65. doi: 10.21106/ijma.432.
48. Iliyasu Z, Garba MR, Gajida AU, Amole TG, Umar AA, Abdullahi HM, Kwaku AA, Salihu HM, **Aliyu MH**. 'Why Should I Take the COVID-19 Vaccine after Recovering from the Disease?' A Mixed-methods Study of Correlates of COVID-19 Vaccine Acceptability among Health Workers in Northern Nigeria. *Pathog Glob Health*. 2022 Jun; 116(4):254-262. Doi: 10.1080/20477724.2021.2011674.

**C.2. Website(s) or other Internet site(s) – include URL(s)**

N/A

**C.3. Technologies or techniques**

N/A

**C.4. Inventions, patent applications, and/or licenses**

None

**C.5. Other products and resource sharing**

None

**D. PARTICIPANTS****D.1. What individuals have worked on the project?** Please include calendar, academic, and summer months.

| Commons ID  | S/K | Name              | Degrees(s)          | Role                | Cal | Aca | Sum | Foreign | Country | SS  |
|-------------|-----|-------------------|---------------------|---------------------|-----|-----|-----|---------|---------|-----|
| MKALLINY    | Yes | Medhat Kalliny    | MD, PhD, MPH, FAAFP | PD/PI               | 1.2 |     |     |         |         | N/A |
| MAliyu      | No  | Muktar Aliyu      | MD, DrPH            | Co-Investigator     | 0.3 |     |     |         |         | N/A |
| EHAMILTON01 | No  | Ella Hamilton     | AA                  | Program Manager     | 0.3 |     |     |         |         | N/A |
|             | No  | Mary Martin-Cohen | MS                  | Project Coordinator | 0.6 |     |     |         |         | N/A |

**D.2 Personnel updates****a. Level of Effort:****b. New Senior/Key Personnel:****c. Changes in Other Support:****d. New Other Significant Contributors:****E. IMPACT****E.1 - What is the impact on the development of human resources, if applicable?**

The NIOSH Training Program Grants (TPG) support occupational health programs to meet the growing need for skilled occupational health providers and for health care for the workforce. The Meharry Medical College Occupational Medicine residency program has been a proud recipient of three NIOSH TPGs since 2008. In that time, the program has accomplished all of its goals and has enabled high quality specialized training for a diverse group of over 40 physicians practicing in a multitude of occupational medicine focus areas. Our graduates serve as local, regional, and national leaders in major corporations, government, academia, industry, and private practice. Meharry is the principal producer of minority occupational medicine physicians, ensuring that as the diversity of the workforce grows, so will the population of providers who deliver the services needed for their care.

**E.2 - What is the impact the Public Health Relevance and Impact? The investigator should address how the findings of the project relate beyond the immediate study to improved practices, prevention or intervention techniques, legislation, policy, or use of technology in public health.**

The Meharry occupational medicine residency program provides high quality training opportunities that will produce exceptional occupational medicine physicians who will positively impact the health of workers and their communities. The importance of this training rests on the continually increasing demand for highly skilled occupational medicine physicians who can effectively address the health needs of a growing and diverse US workforce

and ensure the highest standards of occupational health and safety are met. In keeping with the mission of Meharry, the training competencies are geared towards attaining knowledge and skills necessary for serving the healthcare needs of underserved populations.

#### F. CHANGES

**F.1 - Changes in approach and reasons for change, including changes that have a significant impact on expenditures**  
N/A

**F.2 - Actual or anticipated challenges or delays and actions or plans to resolve them**

N/A

**F.3 - Significant changes to human subjects, vertebrate animals, biohazards, and/or select agents**

N/A