

SECTION I

TPG Summary:

As the largest civilian OEM program in the US, established in 1997, the objectives of the University of Pennsylvania (UPENN) Perelman School of Medicine, Occupational and Environmental Medicine (OEM) Residency are to train residents in OEM preparing them for a career in academia, private practice, government and industry. We also aim to address the national shortage of OM physicians, their shortage in underserved areas and the shortage of underrepresented minority OM physicians. This shortage, addressed by the Institute of Medicine two decade ago, still persists. We plan to continue this highly successful Competency Based Residency Training Program directed primarily at experienced physicians making a mid-career change to full-time OEM practice, to improve the capacity for education and training of the Nations' primary workforce with special emphasis on individuals from disadvantaged background and underrepresented minorities, to develop and foster in our residents the ability to teach, and to equip trainees with expertise in population health and the business of medicine, Program output is highly trained OEM specialists with eligibility for the American Board of Preventive Medicine-Occupational Medicine (ABPM-OM).

Mid-career physician transitioning to another specialty may find training options limited. Our novel UPENN OEM Residency trains mid-career physician as well as recent medical school graduates in OEM. The OEM Residency continues to teach our well-honed curriculum ensuring compliance with the most updated ACGME Program Requirements, ACGME Preventive Medicine Milestones for Occupational Medicine and the American College of Occupational and Environment Medicine (ACOEM) Competencies. We also look for new ways to present information to increase trainee interest and engagement. Mid-career physician enter via the External Track and recent graduates via the Internal Track. Candidates for the External Track and are in full-time OEM practice at an approved clinical training site, such as a free standing clinic, or a university, corporate, military, or governmental setting. Candidates for the Internal Track have their primary training site at the University of Pennsylvania Hospital and the Philadelphia Veteran's Administration Hospital. Internal residents also rotate at the Chester County Hospital OEM clinic. Internal residents also accomplish elective rotations according to their individualized Educational Plan. Elective rotations include various medical subspecialties such as Rheumatology, Dermatology, Ophthalmology, Orthopedics, Industrial Hygiene; and Quality Improvement at both the VA and at UPENN OEM clinic. In addition internal residents rotate at OSHA and NIOSH. A research elective is also available. Clinical Sites for external residents include: industry; hospital based and free standing clinics; and corporate, military and governmental settings. External residents have ongoing contact with one or more senior level OEM physicians who acts as a site supervisor for the purpose of the training program.

During the reporting period July 1, 2016-June 30, 2017 we had 13 program residents, 6 OM-2 and 7 OM-1. In June 2016 the AGCME determined that OEM trainees are eligible to be appointed to the second year if they have completed an ACGME accredited residency. Of our 7 current OM-2 residents, 2 met the requirements to complete only one year of residency yet they decided to remain in the program for two years in order to avail themselves of the added learning opportunities of the additional year. The additional year is designed to build upon the initial year of broad-based education. It reflects more specialization of competency acquisition allowing for enhanced personal growth and development with deep dives into research, independent work, and time management and negotiation skills

The program will continue to graduate one NIOSH supported resident each year for a total of five NIOSH supported residents over the 5-year grant period. Successful applicants meet requirements of at least one ACGME-accredited clinical PGY-1 year, have completed or are actively enrolled in an MPH (or other masters' degree program) with completion or partial completion of the 5 core courses required by the ACGME. All residents will be trained at an approved clinical training site with appropriate

supervision by a board certified preventive medicine physician. Since this grant period three NIOSH supported residents have graduated and one is currently in training.

ACGME-accredited clinical PGY-1 year residents are enrolled or have completed the 5 core courses required by the ACGME, have completed or are actively enrolled in an MPH or masters level degree, and are in full-time OM practice at an approved clinical training site (CTS). Residents will complete at least 4 months of clinical training each year at their CTS. Concurrent with clinical work, residents undertake five 2-month subject-area rotations (SARs) during the first year and five 1-month long SARs during the second year along with the Second Year Project and presentations of research at the annual AOHC. The OM-1 SARs are: The Workplace: Industrial Hygiene, Safety and Ergonomics; Organizational Management; Environmental Health: Risk Hazard Communication and Control; Population Based Occupational Medicine; and The Worker: Disability and Work Fitness. The OM-2 SARs are: Industrial Hygiene II & Clinical Exposure Assessment; Advanced and Emerging Topics in Organizational Management; Mindfulness, Leadership, Resiliency & Team Building; Disaster Management & Emergency Preparedness; and Career & Personal Development, Negotiation and Travel Medicine. In addition, five longitudinal courses are offered over the course of the two years: Research Methods Course & Second Year Project; Clinical Toxicology; Occupational Epidemiology; Critical Review of the Occupational & Environmental Health Literature; and Clinical Occupational Medicine. The mentored 2nd Year Project is the final research project of sufficient quality to be presented at a national meeting and submitted for publication.

CTS and SAR directors are diplomates of the ABPM and national experts in the area they teach. The UPENN OEM residency program has successfully achieved objectives of training OEM physicians who are expert in the field preparing them to carry out the purposes of the Occupational Safety and Health Act of 1970 as well as increasing the number of OEM physicians and underrepresented physicians. Since its inception in 1997 the program has 123 graduates to date with 14 residents currently enrolled. Employed in industry, government, and academic centers as well as in cities and rural areas, they report that the program met their needs and substantially increased their knowledge of OEM. Most work in areas underserved by residency trained OEM physicians.

Public Health Relevance:

Drs. McKenzie and Emmett co-authored a manuscript published in the Journal of Graduate Medical Education (October 2017) titled Characteristics and Outcomes of an Innovative Train-in-Place Residency Program. The conclusion was that training in place is an effective approach to provide midcareer physicians seeking comprehensive skills and board certification in occupational medicine formal training, and may be adaptable to other specialties (see attachment).

The well-documented, long-standing shortage of formally trained physicians in OEM despite a strong and increasingly robust market of available positions persists. The American College of Occupational and Environment Medicine (ACOEM) projects a net workforce reduction of 891 (33%) from 2015-2025. Given that physicians often become aware of the field of OEM after formal training in another specialty and many years of practice, this unique program allows them the opportunity to make a mid-career shift to OEM without prohibitive financial, social and family sacrifice, and graduates physicians ready to meet the nations' primary and preventive medicine healthcare needs. One of our residents researched this topic under the guidance of Drs. McKenzie and Shofer. A manuscript to be submitted for publication is planned. Most program graduates (58%) practice outside of the 25 largest Standard Metropolitan Statistical Areas, underserved as regards the OEM field, and we expect that trend to continue.

Key Personnel:

Judith Green-McKenzie, MD, MPH
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Dr. McKenzie is Professor, Division Chief, and Residency Program Director of Occupational and Environmental Medicine at UPENN. She is active in clinical practice, research, education and administration. She oversees the UPENN residency program teaching in and directing several subject area rotations - such as the Critical Review of the Literature, Research Methods and Second Year Project, Occupational Epidemiology Courses and the Population Occupational Medicine SAR. She also precepts residents in the clinic.

Sajjad A. Savul, MD, MS, FACOEM

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Dr. Savul is a Clinical Assistant Professor, Associate Residency Director and Medical Director of Presbyterian Medical Center in the UPENN OEM Division. He was Chief Resident in the UPENN OEM residency program (2007). He precepts OEM residents in the clinic and is course Co-Director for the Career and Personal Development; Negotiation Skills & Travel Medicine and the Workplace Rotations.

Edward A. Emmett, MD, MS

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Dr. Emmett is Professor and Director of Academic Programs in OEM at UPENN. Founder of the UPENN and Johns Hopkins OEM Residency Programs. Dr. Emmett is Director of the Organizational Management Rotation for both OM-1 and OM-2 residents.

Lloyd B. Tepper, M.D., Sc.D.Hyg.

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Dr. Tepper is Adjunct Professor of OEM in the Department of Emergency Medicine, Division of OEM at UPENN. Dr. Tepper is founding faculty for the UPENN program. He teaches the Toxicology Course and attends and moderates Journal Club and Grand Rounds.

Poune Saberi, MD, MPH

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Dr. Saberi is section chief of OEM at the Michael J. Crescenz Philadelphia VA Medical Center. She completed her Family Medicine and OEM residencies at UPENN. She teaches the Industrial Hygiene II SAR, is the chair of the Clinical Competency Committee and site supervisor for Internal Track residents.

Frances Shofer, PhD

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Dr. Shofer is Adjunct Professor and the Director of Epidemiology & Biostatistics in the Department of Emergency Medicine at UPENN. She collaborates with clinical investigators in the design, execution, and analysis of studies and has co-authored over 300 peer-reviewed publications and mentors students, residents and faculty. She is Co-Director of the Population Occupational Medicine SAR, the Critical Review of the Literature Course and the Research Methods and Second Year Project Course.

TPG web link:

<http://www.med.upenn.edu/oem/residency.shtml>

SECTION II

Program Highlights:

All five abstracts submitted for presentation to the 2017 AOHC meeting were accepted for poster presentation. One resident (Dr. Omeogu) was awarded a grant from the UPENN Prevention Research Center (PRC) in partial support of her research on the utility of a cognitive behavioral therapy app for employees with insomnia. Another of our residents (Dr. Franklin) was named a Prevention Research Scholar of the UPENN PRC, where funds have been allotted in support of her research on the implementation for the Diabetes Prevention Program (DPP) for employees. The DPP was headed by Dr

McKenzie and the success of the pilot program led to institutional funding for the DPP. Several residents intend submit their research for publication in 2018. Resident Dr. McLane was awarded the Best Innovations in Medical Education Abstract during Health Equity Week. The Equity Poster Session represented Health Equity Research, Quality Improvement, and Medical Innovation Projects.

The following resident activities were accomplished during this cycle (7/1/2016-6/30/2017):

Resident Abstract Poster Presentations:

American Occupational Health Conference, April 2017, Denver, CO.

Nima Alipour: Efficacy of Early Intervention with Manual Therapy in Acute Occupational Low Back Pain on Overall Case Duration

James Bencivenga: Evaluation of a Diabetes Incentive Program for Diabetic Employees of Multispecialty Medical Group

Michael Deveau: A Retrospective Descriptive Study of Asbestos Related Diseases Found on Death Certificates of 1930 census Ambler, PA Residents

Crystal Jones: Assessment of Medical Student Knowledge of the Field of Occupational and Environmental Medicine

Chinyere Omeogu: Efficacy of a Mobile Behavioral Intervention for Workers with Insomnia

Penn Medicine's Graduate Medical Education Health Equity Week, April 2017, Philadelphia, PA.

Rambod Rouhbakhsh: Effect of Health Risk Assessment and Focused Education on Wellness in an Obese Employee Population

Chinyere Omeogu: Efficacy of Self-Guided Cognitive Behavioral Therapy Intervention for Workers with Insomnia

Hannah McLane: Goodness Versus Fairness in Public Health Decision Making: Designing an Animated Bioethics Learning Module

Webinar:

Blythe Allen-Hardy: HRSA-CDC Preventive Medicine and Public Health Issues Series. Hearing Health Care: Safety and Communication, May 12, 2017.

Publications:

Breyre A, Green-McKenzie J: A Case of Acute Lead Toxicity associated with Ayurvedic Supplements. British Medical Journal Case Reports May 2016 Notes: DOI: 016; doi:10.1136/bcr-2016-215041 Medical Student Mentored Research. One of top 10 most read case reports in July 2016.

Beizhan Yana, Martin Stutea, b, Reynold A. Panettieri Jr.c, James Rossa, Brian Maillouxb, Matthew J. Neidell, Lissa Soaresb, Marilyn Howarthe, Xinhua Liuf, Pouné Saberi, Steven N. Chillruda, Association of groundwater constituents with topography and distance to unconventional gas wells in NE Pennsylvania. Science of The Total Environment. Volume 577, 15 January 2017, Pages 195-201.

Kalliny M, Green-McKenzie J: Occupational Health and Sleep Disorders in Underserved Populations. International Occupational Health. In Primary Care: Clinics in Office Practice on Primary Care of the Medically Underserved America. Morelli V, Zoorob R, Heidelbaugh H. (eds.). Elsevier Press, 44(1): e73-e97, March 2017. [*NIOSH acknowledged*]

Gompf S, Velez A, Green-McKenzie J: Leptospirosis. Medscape Drugs & Diseases May 2017 Notes: Updated May 18th, 2017. Available at: <https://authoring.medscape.com/content/220563>.

Greaves W, Das R, Green-McKenzie J. Evidence-based Practice Work-relatedness Panel: Work-relatedness. MDGuidelines. Westminster, CO: Reed Group, Ltd. (in press). Available at: www.MDGuidelines.com. Editor-in-Chief: Kurt T. Hegmann, MD, MPH; Assistant-Editors: Jeremy J. Biggs, Matthew A. Hughes (eds.). Westminster, CO: Reed Group, Ltd. 2017 Notes: In Press.

Saito K, Saberi P, Shofer F, Green-McKenzie J: Health Care Personnel Perception of the Privacy of Electronic Health Records: A Pilot Study Journal of Occupational and Environmental Medicine 59(6), June 2017 Notes: Resident mentored research. [*NIOSH acknowledged*]

Torigian D, Green-McKenzie J, Liu X, Shofer FS, Werner T, Smith CE, Strasser AA, Moghbel MC, Parekh AH, Choi G, Goncalves MD, Spaccarelli N, Gholami S, Kumar PS, Tong Y, Udipi JK, Mesaros C, Alavi A: A Study of the feasibility of FDG-PET/CT to systematically detect and quantify differential metabolic effects of chronic tobacco use in organs of the whole body - a prospective pilot study. Academic Radiology. Epub 2016 Oct 18. [*NIOSH acknowledged*]

Other Accomplishments:

- Dr. Judith McKenzie was promoted to the rank of Professor of Emergency Medicine
- Dr. Omeogu employed by Southeast Louisiana Veterans Health Care System
- Dr. Kalliny was promoted Associate Professor at Meharry School of Medicine
- Dr. Sayre to Medical Director of CNS Y-12 National Security Complex
- Dr. Rouhbakhsh to core clinical faculty at Forrest General Hospital Family Medicine Residency
- Dr. Vanichkachorn to Corporate Health Director
- Dr. Newcomb continues as Assistant Professor at the Mayo Clinic
- Dr. Liu is now a staff physician at Naval Health Clinic Quantio
- Dr. Kowalski appointed Assistant Professor in the Department of Clinical Sciences at The Commonwealth Medical College in Scranton, PA
- Dr. Vrablik was appointed Medical Director for Employee Health Services at HealthWorks in Allentown, PA
- Dr. Brewer-McCarthy was promoted to National Medical Director of Medical Surveillance Services, Concentra.
- Dr. Boquet has been named Director of Health Services and Chief Health Officer for The Dow Chemical Company

The UPENN OEM Residency will continue to address the national shortage of OM physicians, their shortage in underserved areas and the shortage of underrepresented minority OM physicians by ensuring our curriculum is in compliance with ACGME Program Requirements, ACGME Preventive Medicine Milestones for Occupational Medicine and the American College of Occupational and Environment Medicine (ACOEM) Competencies in order to work towards the success of our residents and their contribution to the diverse regions throughout the U.S.