

Concept Clearance

Branch: Population Health Branch

Council Period: 201910

Concept Title: Pediatric and Reproductive Environmental Health Fellowships: Strengthening the Pipeline

Introduction

The NIEHS, the Agency for Toxic Substances and Disease Registry at the Centers for Disease Control & Prevention (ATSDR/CDC) and the Environmental Protection Agency (EPA) have a long history of working together on children's environmental health. Through regular interactions and dialog, we recently identified a new opportunity to collaborate as part of the Pediatric Environmental Health Specialty Unit (PEHSU) program. Specifically, we have identified a need for a fellowship program to train pediatric and other healthcare professionals in the assessment and management of children whose health problems are related to the environment and to provide those professionals with the necessary public health and clinical expertise to be successful academicians and physician scientists. The fellowship would build core competencies in environmental health, advance scientific and grant writing skills, and develop effective advocacy skills. In addition, the program would foster expertise in the critical review of the environmental health literature and in risk assessment and risk communication.

There is a recognized need to build the knowledge and skills of pediatricians to address environmental health issues (Landrigan et al., 2019; Miller, Valenti, Schettler, & Tencza, 2016). Through a mix of funding sources, there have been fellowship programs for pediatric environmental health since 2002, which has enabled pediatricians to gain this knowledge and skill set. These opportunities allowed pediatricians to work with PEHSUs on outreach and communication efforts and to learn about ongoing research on pediatric environmental health (such as the research efforts taking place in the NIEHS and EPA funded Children's Environmental Health Centers). Although participants of these prior programs have found the fellowships to be rewarding, funding for the programs has been inconsistent. The recent publication by Landrigan et al. (2019) summarizes the history and outcomes of these programs and highlights the benefits of these fellowship efforts. The authors posit their findings demonstrate the fellowship program has contributed to the expansion of a national capacity in pediatric environmental health.

In this context, we are proposing the Pediatric and Reproductive Environmental Health Fellowship (PREHF) program that will build off the robust children's environmental health research and community-engagement base, enhance the growing connections with PEHSUs, and provide a reliable source of support for pediatric and reproductive environmental health fellows. While previous fellowship programs focused only on pediatric environmental health, this program will expand the focus to include reproductive environmental health. It has become increasingly clear that understanding and communicating about health effects from environmental exposures to pregnant mother is also important. The program will be grounded on a set of domains (such as PREH knowledge & clinical skills, advocacy, and teaching & scholarship) to ensure that participants receive well-rounded training opportunities that will increase their environmental health literacy, thereby strengthening their confidence in communicating to others (patients, providers, and policy makers) about environmental health issues related to children. The goal is to produce healthcare professionals who excel in education, clinical care, communication, and advocacy that addresses pediatric and reproductive environmental health problems.

The PREHF program will target pediatric healthcare providers (such as pediatricians, family medicine physicians, and nurses), obstetricians/gynecologists, and other interested healthcare professionals who are going into post-graduate year 4. This timing is ideal because pediatricians and others completing their residency will be looking for fellowship opportunities and they will have completed clinical intensives and various rotations.

Research Goals and Scope

The Pediatric and Reproductive Environmental Health Fellowship (PREHF) program will introduce pediatric healthcare providers, obstetricians/gynecologists, and other interested healthcare professionals to issues in environmental health. The program will include training in clinical practice in environmental health, community-level advocacy, and teaching. The Fellows will:

- Acquire advanced curricular content in pediatric and reproductive environmental health
- Gain an understanding of the many interactions – biological, psychological, social and cultural – that occur between children, pregnant women, and new mothers and their environment

By the conclusion of the training period, all fellows must meet competencies in environmental medicine as it pertains to pediatrics and reproductive health, including those milestones around medical knowledge, patient care, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice.

The goal of the program is to create of a strong network of healthcare professionals who possess the skills and knowledge to address the complexities of pediatric and reproductive environmental health. With their increased environmental health literacy, these fellows will become recognized leaders in the field and drivers of change. As the network grows, with consistent support, fellows will be well positioned to advocate for an increase in the quantity of pediatric and reproductive environmental health in medical education.

Furthermore, they will be well-equipped to inform systemic change to improve pediatric and reproductive environmental health. Finally, this program will enhance the interactions between the NIEHS research community and the PEHSUs.

Mechanism and Justification

We are proposing a mechanism that will allow us to have the same functions as an Institutional Training Program. We envision a mechanism for the Pediatric and Reproductive Environmental Health Fellowship (PREHF) award that will give the Principal Investigator (PI) the flexibility to offer 2-year or 3-year fellowships to train pediatric healthcare providers in assessing and managing children, pregnant women, and new mothers with environment-related health problems and provide them with the necessary public health and clinical expertise to be successful academicians and physician scientists.

A requirement of the program is for the applicant organization to partner with a PEHSU. If the applicant institution is not already part of a funded PEHSU, it must submit its proposal in collaboration with a funded PEHSU. The PEHSU partnership will ensure that the fellows gain real-world experience in risk communication and increased awareness of the range of pediatric and reproductive environmental health issues facing communities across the country. In addition, the applicant institution must demonstrate a strong foundation in children's environmental health research to ensure the fellows have a robust selection of research and mentorship opportunities.

The PREHF program will be designed to allow the Program Director to establish a solicitation process for selecting fellows, as well as to develop a curriculum of study and research experience necessary for providing high quality training. The fellows would maintain some clinical time during this fellowship. The PREHF award would offset the cost of stipends and tuition support for the appointed fellows.

The curriculum must have a balance of the following elements: didactic curriculum, clinical practice, research, teaching, and community activities including community consultation, clinical and patient education, outreach and risk communication. The content and format of the fellowship will be dependent on each site.

Anticipated number of awards: 3

We expect that the annual programmatic budget will increase from \$1M in year one to a maximum of \$3M in year three as the institutions recruit more fellows and fill their training slots.

Expected program cost per year:

Year 1	\$1M
Year 2	\$2M
Year 3	\$3M
Year 4	\$2M
Year 5	\$1M

Timeline

We are proposing the following timeline:

September 2019	Concept Clearance to Council
Winter 2019	Publish Funding Opportunity Announcement
Spring 2020	Application Receipt Date
Late Summer 2020	Review Applications
February 2021	Program Plan to Council
Spring 2021	Award grants

References

Landrigan PJ, Braun JM, Crain EF, Forman J, Galvez M, Gitterman BA, Halevi G, Karr C, Mall JK, Paulson JA, Woolf AD, Lanphear BP, Wright RO. Building Capacity in Pediatric Environmental Health: A Fifteen-Year Report on the Academic Pediatric Association's Professional Development Program. *Acad Pediatr.* 2019 Jan 9. pii: S1876-2859(19)30002-6. doi: 10.1016/j.acap.2019.01.001. [Epub ahead of print] PubMed PMID: 30639371.

Miller MD, Valenti M, Schettler T, Tencza B. A Multimedia E-Book-A Story of Health: Filling a Gap in Environmental Health Literacy for Health Professionals. *Environ Health Perspect.* 2016 Aug 1;124(8):A133-6. doi: 10.1289/EHP222. PubMed PMID: 27479986; PubMed Central PMCID: PMC4975592.