2015 NIEHS Core Centers Evaluation

Evaluation Advisory Subcommittee Final Report

Executive Summary

U.S. Department of Health and Human Services
National Institutes of Health
National Institute of Environmental Health Sciences

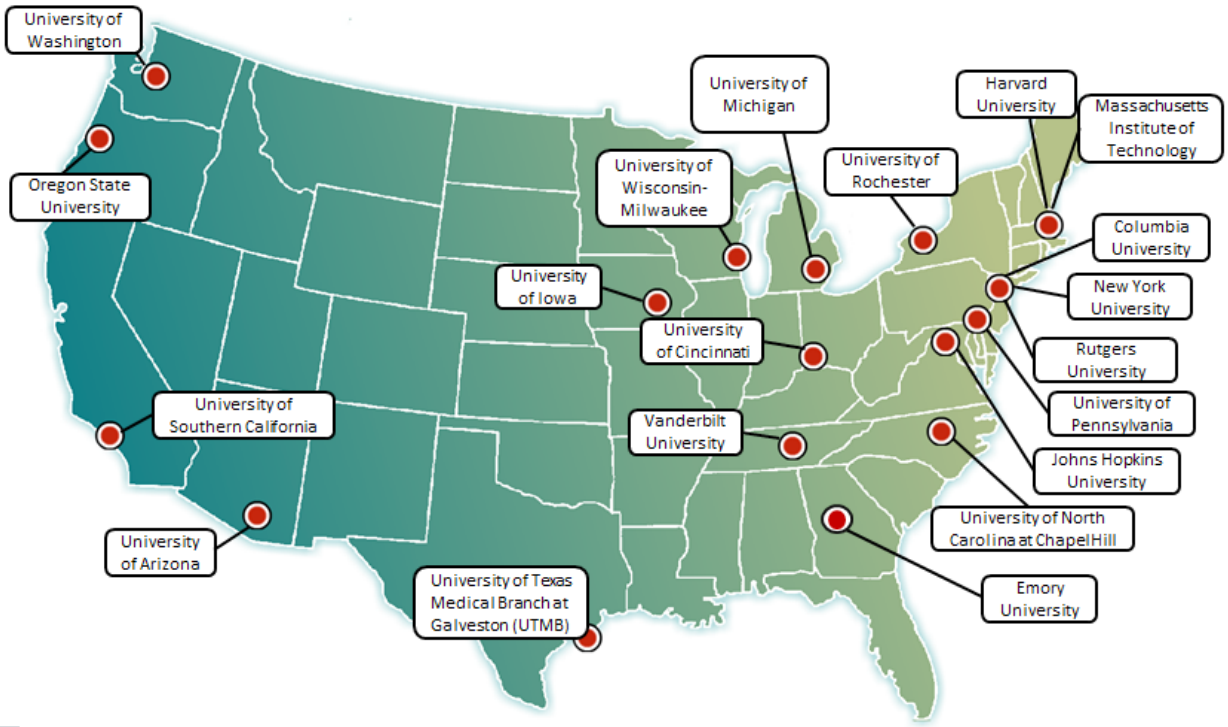
November 12, 2015

This document is available electronically at www.niehs.nih.gov/CoreCentersExecSumm2015.

Executive Summary

The National Institute of Environmental Health Sciences (NIEHS) has used the National Institutes of Health (NIH) P30 Center Core grants mechanism to support shared facilities and resources for environmental health research for more than 50 years. The aim of the Environmental Health Sciences Core Centers (Centers) is to guide and support environmental health research at institutions throughout the United States, provide intellectual leadership in environmental health research, foster innovation, and support new ideas and collaborations among investigators. The Centers also provide career development for future leaders in environmental health science (EHS), by providing centralized scientific resources and facilities that are shared by investigators working on existing research projects funded by other research grant mechanisms. The Centers strive to translate research into public health outcomes and to foster community-academic partnerships, through engaging communities in multidirectional communication with researchers.

The following map shows the Centers that participated in the 2015 Centers evaluation. The essential structure of each Center includes an administrative core, an overall strategic vision or theme, an Integrated Health Sciences Facility Core, a Community Outreach and Engagement Core (COEC), other optional facility cores, a pilot project program, and a career development core.



In 2014, NIEHS formed an Evaluation Advisory Subcommittee (Subcommittee) to evaluate its Centers program. This was the third programmatic evaluation of the Centers since their inception. The first evaluation focused on outcomes of the Centers program from 1993 to 2003, including key highlights, outcomes of pilot funding, and supplements to funding. The evaluation lasted more than 18 months and included substantial data collection, publication analysis, and examples of successful activities. The results of the evaluation resulted in changes to the funding opportunity announcement (FOA). Following the FOA changes, a second evaluation was conducted in 2010 that focused on the process that Centers used to fulfill their goals, and specifically to assess the effectiveness of the programmatic and structural changes that were made in the October 2005 FOA. The evaluation lasted approximately eight months and included grantee surveys from principal investigators and COEC leaders, publications, and analyses of facility cores.

The current evaluation goals included both process and outcomes of the Centers, and focused on the extent to which the Centers foster and produce complex, emerging, and translational environmental health research, including examples of the research they support, the strategies they use to facilitate the research, and the impacts of the research. The evaluation also addressed the strategies by which the Centers support career development and the NIEHS strategic plan.

The Subcommittee was convened in September 2014. The purpose and goals of the evaluation were presented by NIEHS staff and the evaluative questions were reviewed. The meeting was followed by three webinar/conference calls in early 2015, to review data assembled from the Centers by NIEHS staff. In June 2015, a face-to-face meeting was held to discuss the summative evaluation questions and to plan the final products of the evaluation. The Subcommittee reviewed the substantial evidence that had been compiled by NIEHS staff and answered the following summative questions.

1. How does the Centers program bring value, or lead the EHS field, in relation to complex, emerging, and translational research?
2. What can the Centers do, that can't be done with other research grant mechanisms?
3. What promising processes and strategies emerge from the Centers as critical for the program and the EHS field, defined broadly and including public health?
4. How can the Centers help inform NIEHS about emerging fields and scientific opportunities?
5. How should the Centers be involved with identifying and implementing the next set of strategic plan goals?

In this report, we summarize our responses to each of these questions. Key messages that arose during the review process follow.

P30 Centers serve as critical hubs for environmental health research

Numerous examples were provided by the Center directors of ways in which the Centers foster interactions, collaborations, training, mentoring, innovation, and application of leading edge interdisciplinary approaches. The intellectual interactions may not have occurred in the absence of the environment created by the Centers. The resources that are provided within the Centers, to both junior and more accomplished investigators, are significant and provide valuable assistance to investigators pursuing new areas of scientific inquiry. An important

aspect of the Centers is that they introduce many individuals to the area of EHS, and offer opportunities for individuals to interact with NIEHS who might not if the Centers did not exist. Many of the current Centers are long-standing, which highlights the importance of leadership succession and sustainability planning.

Core Centers are a source of collaboration and sharing for EHS

Examples provided by the Centers point to the ability of the Centers to connect across the university with other research centers that may or may not be funded by NIH, or specifically NIEHS. This collaboration among centers was viewed by the Subcommittee to be highly positive. The potential for Centers to connect both with other centers in their own institutions or across institutions has not been fully realized. The Subcommittee recommends that NIEHS do more to enhance cross-collaboration. These collaborations could occur at the investigator level, as well as with core facilities and other institutions or agencies.

COECs are a critical and integral component of the Centers

With their strong emphasis on community outreach and engagement, Centers have a finger on the pulse of the public. Thus, the COECs are viewed as critical to the Centers. The definition of community is broadly defined as anything beyond academia, and includes a variety of entities, including neighborhoods, populations, and other stakeholders. The COECs are viewed as a critical component for the translation of Center work and environmental health to the public. If the work of the Centers does not reach the American people, its value is not fully realized. The COECs should not only be viewed as the mechanism for translating the work of the scientific community, but also the body that ensures that Center members can engage in translation. The COECs also play a critical role in ensuring that the scientific community hears and responds to the priorities and research needs of the community. Community engagement should be an expectation of all Center members, and should be explicitly and thoughtfully considered for all aspects of the Center, including pilot projects, cores, and users of facilities.

Importance of the Centers embracing the strategic plan

One of the most challenging areas of the evaluation was the determination of the extent to which the Centers embrace the NIEHS strategic plan. To date, the Centers have not been asked to address or provide examples of how they align with the strategic plan, but ample examples arose regarding the potential for the Centers to play a more important role in this area. Specifically, the COECs within the Centers could provide a platform for helping to educate the public about the overall goals of the strategic plan. Pilot project programs and other initiatives, especially in translational work, could provide a resource for NIEHS to grow underrepresented areas of the strategic plan. Cross-collaboration among the Centers could allow for the development of communities of interest around special topics that align with the strategic plan, such as the current inter-Center workgroup on fracking.

Reporting

The review Subcommittee appreciated the large volume of data that the Centers produce and that was distilled by NIEHS staff. Yet there was the overarching sense that a lot of the data have been collected historically and may not adequately reflect the parameters currently of most interest. Specifically, new metrics are needed to capture translational research, innovative science, community engagement, and collaboration and sharing

across and within Centers. Measures are needed to accurately determine the extent to which the Centers enhance the institutional infrastructure for EHS research. Core use is routinely measured, but the data suggest that most research projects were found to use only one core. Broad use of cores by investigative teams is encouraged. It wasn't clear that the current system captures all the information about core use, given their critical role in the Center infrastructure. Methods are needed to measure the extent to which Center cores are derived from infrastructure already present in the university, and what specific additive value the Center funding brings. It is important to track the outcomes of core usage, the extent to which trainees are able to use core facilities, and how these costs are recovered. In general, the Subcommittee found that the formal metrics did not capture much of the exciting work of the Centers. Rather, narrative accounts of Center activities provided a more thorough and in-depth database that the Subcommittee drew upon.

A translational framework in EHS research is needed

The October 2005 FOA was modified to stipulate that Centers were required to include an Integrated Health Sciences Facility Core to facilitate translational and clinical research, either patient-oriented or population-based, that enhance translation of basic research findings into practical applications for patients and communities. This addition was in direct alignment with the NIEHS strategic plan that aims to understand individual susceptibility across the life span to chronic, complex diseases resulting from environmental factors, in basic and population-based studies, to facilitate prevention and decrease public health burden.

All 20 Centers indicated in their applications that they used the Integrated Health Sciences Facility Core to help promote translational research. However, the way in which this was accomplished varied. Examples include support for global population research studies, assistance with studies involving human participants, and encouraging investigators to include environmental measures in their funded cohort studies. There was much flexibility in the design of the Integrated Health Sciences Facility Cores, with some cores providing opportunities for Center members to obtain clinical samples and patient data needed for their research and other cores supporting studies of the etiology, pathogenesis, and course of disease in patient populations. NIH supports bench-to-bedside translational research within the Clinical and Translational Science Award program or other translational programs from various NIH institutes and centers. NIEHS Centers provided examples of partnerships with Clinical and Translational Science Award programs that take advantage of the resources offered by the programs, such as pilot program funding, training for students and junior investigators, access to biorepositories and other data, access to clinical and community populations, and biostatistics training and services.

The wide array of examples of translational research was so great that the evaluation Subcommittee spent considerable time exploring models that capture the translational process within the EHS domain. Historically EHS has focused on the health of broad populations and not necessarily the health of groups of patients. While the Subcommittee believes that the link between environmental exposures and diseases seen in clinical practice is critically important, requiring Centers to conduct studies of clinical populations may not be desirable.

The major components that appear to be offered by the Integrated Health Sciences Facility Cores include the following.

1. Helping educate investigators on the meaning of translational research and ways to increase its presence in the research portfolio.
2. Service provision, including assistance in recruitment, independent review board assistance, transport of biological samples, and translation of discovery into innovation and practice.
3. Collaboration with existing Clinical and Translational Science Award programs to broaden and expand research beyond the patient population and the traditional clinical trial model.

The Subcommittee concluded that generating a common definition of translational research is also something NIEHS should consider and communicate. It may be difficult for some Centers to self-categorize or present their own research as translational, if a shared understanding is not developed on what this term means. The Subcommittee discussed translational science as a research process, product, data set, or technology that contributes to the health of the American people. Information dissemination is communication or science translation, but not translational research. The importance of educating environmental health researchers on translational research compelled the Subcommittee to propose a model that could encompass the science within the Centers and educate others for how the EHS community can contribute to the body of knowledge on translational research. The importance of describing translational research in environmental health led the Subcommittee to draft a separate document that is being submitted to NIEHS as a starting point for the important discussion that needs to be held in the EHS community.

Recommendations

In summary, the key recommendations described in the report included the following.

1. NIEHS should develop additional ways to capture the important work emerging out of Centers, particularly in regard to emerging and translational research, and to determine the most useful reporting method. Metrics are needed to capture collaborations within an institution and across the other Centers.
2. Templates and standard reporting tools need to be developed to capture and quantify Center activities that align with the NIEHS strategic plan. Also, mechanisms are recommended to increase the engagement of the directors in evaluating progress on goals of the strategic plan and future strategic planning activities.
3. The role of the Center director is critically important to the outcomes of a Center. Strategies are needed to assure sustainability of strong Center leadership. Development of impactful EHS leaders of the future should be a goal of the program.
4. The COECs are critical to the Center structure and function, but their scope and function vary across Centers. Opportunities exist to optimize the role of the COEC, particularly in increasing the capacity of all environmental health scientists to understand and engage in translational work.
5. A common definition of translational research in EHS is needed. The Subcommittee is developing a separate document proposing a first step in beginning the dialogue on a common framework that could be used across all Centers, and which would improve our ability to measure engagement in translational research.