

5.o. Recipient Activity o: Collaboration on Epidemiological Studies

Collaborate as needed with environmental public health tracking partners (Appendix III) on epidemiology studies.

5.o.1. Results and Accomplishments

As part of our first demonstration project (Alameda County Project), we collaborated with a private health care provider, Kaiser Permanente of Northern California, and an array of community based and nongovernmental organizations to develop asthma surveillance that would meet the needs of stakeholders in Alameda County. We were interested in our ability to generate high-quality data that generally represented the County population and provided a complete picture of the geography of asthma using a broad array of asthma-related health events. Kaiser Permanente is an HMO which is the region's largest single provider of health services. Kaiser has been a pioneer in medical information technology, maintaining a complete list of enrollees (denominator data) and databases describing hospitalizations, clinic visits, referrals, external claims, and medication purchases by members (numerator data) and utilizing these for both administrative and health services research purposes. This collaboration provided access to health event data for 577,687 residents of Alameda County during the study year of 2001. We also collaborated with a public agency partner the state Medicaid program (Medi-Cal), which covered 227,086 beneficiaries in Alameda County during 2001.

To complement the development of asthma surveillance techniques, we initiated a stakeholder input process to learn about the needs and uses for asthma data within Alameda County. We noted extensive interest in asthma throughout the county from community groups, city and county health agencies, health and environmental advocacy groups, environmental and social justice groups, health care providers, and local representatives from the state legislature. Through the stakeholder input process, we were able to characterize some of the current information needs and activities around asthma in Alameda County. With input from community members with knowledge of neighborhood demographics, resource needs, and sources of pollution that had been identified as priorities, the resulting data were able to be directly related to local concerns. We also partnered with Urban Strategies Council, a local NGO which had developed a web-based community information dissemination tool. In an enhancement of this tool, we worked with Urban Strategies Council to display rates of asthma, adverse reproductive outcomes, unemployment, poverty, overcrowding, and homeownership. These rates were then merged with locations of schools, roadways, and toxic sites. Maps that can be printed from this system provide strong evidence to push for changes in land-use decisions, housing developments, and even diesel-truck routes, which have the potential to result in a multipronged assault on causes of asthma.

Epidemiologic methods continue to be developed enhancing our understanding of the association between environmental exposures and disease. Our analytic staff, with backgrounds in medicine, toxicology, and epidemiology; have applied such methods to appraise, interpret and synthesize evidence related to exposure and disease.

5.o.2. Challenges and Barriers

Issues such as the insular nature of state government and the lack of history of collaboration with academic and private partners are key barriers to developing effective collaborations. With communities, the lack of trust, and the lack of state government employees with skills in community participation, education, training, and facilitation are key barriers.

5.o.3. Lessons Learned

- Building trust with our community partners was a key element of success, and it took time to go through a process of developing partnerships, listening to environmental health concerns of communities, and being receptive to hearing about previous failures of the state government to respond to community needs. Previous successful collaborations with Medi-Cal were important. Our partnership with Urban Strategies Council was facilitated by a pre-existing relationship with them through our Alameda County Pilot Project Advisory Group.
- As we move toward implementation of an EPHTN, it is important to re-examine and carefully consider our goals and approaches in light of our experiences over the last three years. We need to critically assess how we are defining environmental health and its determinants, what models we are using to understand the relationships that we are trying to understand and act upon and how to ensure that our efforts are as well focused as they possibly can be.
- We know that the causes of human disease are multifactorial, resulting from a mixture of factors including those of the physical environment. These interact with other factors in important ways that affect the health of populations, and EPHT provides us with an opportunity to examine these interactions more systematically. To date, the definition and scope of environmental hazards and environmental exposures for EPHT has been limited to chemical and physical pollutants/toxins.
- The definition of environmental health cited by the Pew Commission¹⁷ reflects a broader view: *"Environmental health comprises those aspects of human health, including quality of life, that are determined by interaction with physical, biological, and social factors in the environment. It also refers to the theory and practice of assessing, correcting and preventing those factors in the environment that may adversely affect the health of present and future generations."*

¹⁷ Adapted by the Pew Environmental Health Commission, May 1999.

- The scope and definition of environment and environmental health vary between communities, organizations, and cultures. For the vast majority of stakeholders, the environment is the combination of social, cultural, and external physical conditions affecting the nature of an individual or community (and therefore, their health). With the exception of groups that focus primarily on specific diseases or chemical/physical agents, most stakeholders (including tribes, local public health agencies, and community-based organizations) take a broader approach to understanding and addressing environmental health issues.
- While stakeholders have acknowledged the importance of tracking the limited set of factors identified as relevant to EPHT, they have also expressed concerns about the limitations of focusing solely on downstream indicators. Many stakeholders take a broader approach to understanding and addressing environmental health issues. Communities as well as the academic and governmental sectors have clearly demonstrated the efficacy of such approaches. Examining such approaches within EPHT would be an important step. Some examples of models that may be appropriate to examine include:
 - The Multiple Exposures Multiple Effects (MEME) model (<http://www.who.int/ceh/indicators/indiconcept/en/>),
 - The Driving-Forces-Pressures-State-Exposure-Effect-Action (DPSEEA) framework (http://www.euro.who.int/EHindicators/Indicators/20030527_2),
 - The Exposure-Disease-Stress Framework for Environmental Health Disparities (<http://ehp.niehs.nih.gov/members/2004/7074/7074.html#thes>), and
 - The PRECEDE-PROCEED model (<http://www.nci.nih.gov/aboutnci/oc/theory-at-a-glance/page7>).
- While many stakeholders are aware that the EPHT mandate/scope may be limited to tracking diseases and pollutants/toxins, they are relying on EPHT to assess how it can integrate with and relate to other relevant data, information, and indicators; and to also examine and increase its role in the larger context of public health.

5.o.4. Recommendations

- To facilitate collaborations on epidemiological studies and other EPHT activities, EPHT programs should be required to conduct their programs using the community-based participation model and principles based on the communities' right to know regarding local exposures and hazards. Partnerships based on these principles result in planning and collaborations on projects with common goals, democratic decision-making, joint effort, shared resources, collective outcomes, and mutual benefits.
- Implementation funding should be provided to collaborate with communities and environmental agencies to collect, synthesize, and integrate environmental hazard and environmentally-related disease information, including development of real-time surveillance systems, development or enhancement of disease registries, and spatial/temporal integration of environmental and health data.

- Resources should be directed towards further exploration of partnerships with public and private health service providers, not only for the surveillance of asthma, but for other health monitoring needs.
- Implementation funding should be provided to collaborate with communities and environmental agencies to collect, synthesize, and integrate environmental hazard and environmentally-related disease information, including development of real-time surveillance systems, development or enhancement of disease registries, and spatial/temporal integration of environmental and health data.
- EPHT Programs should develop analytical tools to predict cumulative exposure to geographically-related hazards, as well as develop and evaluate methods for examining multiple exposures, long-term exposures, cumulative impacts, synergistic effects, and vulnerable populations.
- One of the goals of EPHT should be to identify and ultimately adopt broad, multilevel approaches for assessing environmental health status that are consistent with a broader effort to define and address population determinants of health, as has been recommended by the Institute of Medicine.
- EPHT Programs should examine how relevant data, information and indicators, such as data from other sectors, neighborhood indicators, economic data, land-use data, etc. can inform and integrate with EPHT and vice versa. Some of the concepts from Health Impact Assessment may be useful.
- EPHT Programs should develop and evaluate methods for examining multiple exposures, long-term exposures, cumulative impacts, synergistic effects, and vulnerable populations, in keeping with emerging science in these areas.
- EPHT Programs should consider methods to relate environmental health tracking to social, economic, and other community vulnerability indicators. Examine driving forces and pressures related to environmental hazards and exposures as well as the social context in which they operate.