

Understanding Cancer Rate Analyses

January 6, 2023

Role of OHA Public Health Division

OHA Public Health Division responds to concerns about diseases and the environment by analyzing human health and exposure data. Health data are analyzed to identify sources of illness and target interventions to prevent additional cases from occurring. Intervention efforts include collaborating with regulatory agencies to stop exposures (e.g. recalling a contaminated product from the market); ensuring specific preventive measures when indicated (e.g. vaccination); and providing health-related information to health care providers and the public.

Oregon State Cancer Registry (OSCaR)

The purpose of the Oregon State Cancer Registry is two-fold: 1) to provide opportunities for Oregonians diagnosed with cancer to participate in scientific research projects aimed at improving the quality of cancer treatment, and 2) to monitor overall rates and trends in cancer in the population to target and evaluate prevention efforts.

When monitoring cancer in the population, we focus on known causes of common cancers and established risk factors (e.g. smoking and lung cancer; colon cancer screening and early detection of colon cancer).

Occasionally, OSCaR receives requests to perform “cancer cluster” analyses. For these analyses, we follow guidelines published by Centers for Disease Control and Prevention. Cancer is very common and is not a single disease. Cancer has many causal factors.

For “cancer cluster” analyses, we first determine that there is a specific, uncommon type of cancer that is of concern. We then examine the literature to identify known causal agents that might be present in the environment.

Studies to identify new causes of cancer are typically performed by universities or the National Institutes of Health across multiple states, with adequate funding to allow for sufficient study participant recruitment, in-depth data and sample collection, specimen testing, and follow-up. The Oregon Public Health Division can share its OSCaR data with outside researchers (with appropriate documentation and Institutional Review Board review) but cannot conduct research to discover new causes of cancer.

Limitations of neighborhood cancer rate analyses

Although Oregon has a cancer registry, analyzing cancer data to look at rates in small areas (neighborhoods) does not help to identify environmental contaminants that people may be exposed to. Further, neighborhood cancer rate analyses will not explain why any individual case of cancer occurred.

Understanding the methodology of small area cancer rate analyses is important. The statistical methods will find outliers that occur randomly 5% of the time. For every 20 analyses done, at least one rate may appear elevated, but is occurring by chance alone. A statistically higher (or lower) rate by itself doesn't help to provide meaningful data for action. People may draw incorrect conclusions that a higher statistical rate explains causation, whereas it may be random clustering.

Neighborhood cancer rate analyses are not the same as the analyses done to track cancer rates over time for the state and counties. The methodology for small-area cancer analyses was first developed by CDC and the Council of State and Territorial Epidemiologists to address situations in which a group of people in a specific area were noted to have the same type of uncommon cancer. This would provide an initial indication about whether an assessment should be done to identify any potential environmental exposures.

The method was not developed to determine what cancers might be occurring in an area of a known environmental exposure. When the environmental exposures of concern have been identified, neighborhood cancer rate analyses do not provide additional information that will protect public health.

Environmental Public Health Assessments

The process for evaluating concerns related to health conditions and environmental toxics is called Environmental Public Health Assessment. EPHA identify what industries/facilities are located in an area, what they are emitting, where these are located in relation to where people live, proximity to schools, the possible routes of exposure (e.g. air, water), and potential health outcomes of these exposures so we know how to address issues of concern.

Individual Health Concerns

People with health concerns should contact their primary care provider.

Resources:

- <https://www.cdc.gov/cancer/index.htm>
- <https://www.oregon.gov/oha/PH/DISEASES/CONDITIONS/COMMUNICABLEDISEASE/CDSUMMARYNEWSLETTER/Documents/2014/ohd6306.pdf>