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Investigating a Cancer Cluster in Grainger County, Tennessee

The Office of Cancer Surveillance was established to track and increase awareness of cancer in Tennessee. The Tennessee Cancer Registry (TCR) collects nearly 100% of expected new cancer cases diagnosed in residents each year. The TCR periodically receives calls and correspondence from residents regarding apparent excesses of cancer observed in their community.

The objective of this practicum was to use data to investigate a potential cancer cluster reported by a resident of Grainger County, Tennessee.

Initially, we investigated potential environmental contaminant sources in the county. We extracted all cases from the TCR database for the 10-year period 2005-2014 for the county of concern (Grainger) and for the comparison county (Unicoi). A chi-square test was performed to determine whether the observed cancer distribution in Grainger County fits with the expected counts. We stratified cancer cases per cancer type to obtain the cancer types with a higher proportion compared to Unicoi County.

Cervix uteri, kidney and renal pelvis, liver, miscellaneous, myeloma, prostate, thyroid, and urinary bladder were the cancer types which had exceeding proportions. Another chi-square analysis was performed per cancer type but for most cancer types, the p-value was not statistically significant with notable exceptions for miscellaneous cancer, cervical cancer, and some of the liver cancer analyses. The cancer types were stratified into 18 age groups to calculate the age adjusted-rate in Grainger County per census tract. The age-adjusted rates were compared to the statewide rates and

Unicoi County. All the rates were lower in Grainger County, except for prostate cancer. However, prostate cancer is known to be induced by the lifestyle choices as opposed to environmental contaminants. A hot spot analysis will also be completed.

In conclusion, there does not appear to be an increased risk of cancer for persons living in Grainger County. Cancer is a relatively common disease and cases can appear to cluster even when there is no connection among them. Much of the observed cancer disparity is likely explained by poor lifestyle habits in Grainger County compared to other U.S. residents. Chief among these poor lifestyle habits are a higher prevalence of smoking and a poor diet. A report with results and guidelines to reduce cancer risks is being developed and will be shared with the concerned residents of Grainger County.

