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March 13, 2026
Salisbury Community, Chesterfield County, VA
Suspected Cancer Cluster Investigation
By Virginia Cancer Registry

Dear Ms. Frazier:

Thank you for contacting the Virginia Cancer Registry (VCR) regarding the Brain and Central Nervous System (CNS) cancer cluster concern in the Salisbury community, Midlothian. The information contained in this letter provides a description of cancer and cancer clusters, the cancer cluster investigation process for Salisbury, and the findings of the Virginia Cancer Registry (VCR).

Understanding Cancer

What is cancer?

According to the Centers for Disease Control and Prevention (CDC), cancer is not one disease, but rather many different diseases with different causal mechanisms that share a similar characteristic: uncontrollable cell growth and division. Cancers, as a group, are very common. Cancers are the second leading cause of death in the United States, exceeded only by diseases of the heart and circulatory system. According to the American Cancer Society, one of every two men and one of every three women will be diagnosed with some form of cancer at some time in their lives. Because cancer is common, it is not unusual for several people in a relatively small area to develop cancer around the same time.

What causes cancers to form?

Different cancers have different risk factors which promote their development. For example, cigarette smoking causes lung cancer, overexposure to the sun has been shown to be associated with the development of skin cancer, and lack of dietary fiber may be related to colorectal cancer. Other risk factors that have been identified include alcohol abuse, family history of cancer, age, sex, race, and some specific occupational exposures. Smoking, alcohol abuse, and poor diet account for 80% of the cancer deaths that occur.

The degree to which environmental exposures cause cancer is not precisely known. Given that specific exposures are linked to specific types of cancer, if an environmental exposure caused cancer, its effects would be manifested in the occurrence of cases of the same type of cancer.

How quickly does cancer develop?

Cancers differ with respect to latency, or the time between exposure to one or more cancer-causing agents and the development of cancer. However, cancers commonly take 10 to 30 years or more to develop to the point of being detectable. When looking for the cause of cancer, one must consider exposures that took place at least ten years before the cancer was diagnosed.

What is a Cancer Cluster?

According to CDC's *Guidelines for Examining Unusual Patterns of Cancer and Environmental Concerns* updated in 2022, a cancer cluster is defined as a greater than expected number of the ***same or etiologically related cancer*** cases that occur within a group of people in a geographic area over a defined period of time. To be a cancer cluster, a group of cancer cases must meet all of the following criteria:

- **A greater than expected number:** When the number of observed cases is greater than typically observed in a similar setting.
- **Of the same or etiologically related cancer cases:** Must be a specific type of cancer or types of cancer that are known to have a common cause. True cancer clusters rarely involve more than one type of cancer.
- **Within a group of people:** The population in which the cancer cases are occurring is defined by its demographic factors (e.g., race, ethnicity, age, and sex).
- **In a geographic area:** The boundaries of the area in which to include cancer cases needs to be defined carefully.
- **Over a period of time:** The time frame used to establish the beginning and end dates for analysis. The time period chosen for analysis will affect both the total cases observed and the calculation of the expected incidence of cancer in the population.

Until these parameters are met, the group of cancer cases is often referred to as a **suspected cancer cluster.**

When investigations of a suspected cancer cluster are undertaken, there are three main possible outcomes:

- In most cases, an investigation will show that the suspected cluster is not a true cancer cluster.
- Less often, an investigation finds a true cancer cluster, but no cause can be found.
- Rarely, an investigation finds a cancer cluster where the cause can be determined.

A scientific review of over 500 cancer cluster investigations done over 20 years found only about 1 in 8 identified a true increase in cancer rates, and in only one case was a clear cause for the increase found.

Who conducts cancer cluster investigations?

The VCR conducts cancer cluster investigations, in close partnership with the relevant local health district, when a request is made by a local resident or local health district. The VCR also conducts routine cancer surveillance to monitor trends over time, including any increases in cancer rates. The VCR also collaborates with the Environmental Public Health Tracking (EPHT) Program and Public Health Toxicology Program to address environmental concerns when needed.

Methodology

Cancer Case Ascertainment

The Virginia Cancer Registry collects statewide data on all cancer cases diagnosed or treated in Virginia, including Virginia residents who receive care out of state. Under the Code of Virginia § 32.1-70 and further detailed in Administrative Code 12VAC5-90-180, hospitals, clinics, and pathology laboratories must report all cases of malignant tumors and cancers. Virginia also exchanges data with more than 40 other state registries to receive information about residents receiving care out of state. To determine who may be affected when citizens report a suspected cancer cluster to the VCR, specific patient-level information must be collected and reviewed. Cancer incidence data are typically delayed by approximately two years due to the time required for data collection, validation, and reporting.

Population and Time Frame

This evaluation included residents aged 40 and older residing in ZIP Code 23113, which encompasses the Salisbury area in Chesterfield County. The timeframe examined was 2019-2023. Population estimates were determined by using SEER*Stat Software population data from the National Cancer Institute. On average, the estimated population over 40 in this ZIP Code during this five-year time period was around 80,000.

Cancers to be Evaluated

Cancer types evaluated for this analysis were Brain and Other Central Nervous System (CNS), based on the reported cases, for the time period 2019-2023.

Data Analysis

The VCR epidemiologist and a certified oncology data specialist (a professional who collects and analyzes cancer data from electronic medical records) on staff reviewed each patient's diagnostic summary. These data included cancer site, malignancy and metastasis details, staging information, physician notes, and pathology reports to verify the primary cancer site, which is where the cancer originated from and not to where it has spread. Verifying individual cases is a critical step in cancer cluster investigations. This step ensures that the VCR uses accurate cancer diagnoses, including timing, for cancer cluster investigations. For example, if a reported bone cancer was metastasized (i.e., spread) from breast cancer, then this case would be classified as breast cancer for investigation.

The VCR applied a Standard Incidence Ratio (SIR) analysis, as recommended by CDC's *Guidelines for Examining Unusual Patterns of Cancer and Environmental Concerns*. This method helps us identify potential cancer clusters, assess risk, and monitor cancer burden to guide public health efforts. The SIR compares the number of cancer cases in a specific group to the number expected for the same cancer type based on broader population data. The observed and expected numbers are evaluated by interpreting the ratio of these numbers. If the observed number of cases equals the expected number of cases, the SIR will equal 1.0. A SIR less than 1.0 indicates that fewer cases are observed than expected. A SIR greater than 1.0 indicates that more cases than expected are observed. Random fluctuations may account for some SIRs being higher or lower than 1.0. The statistical significance of deviations from the SIR equal to 1.0 was evaluated using a 95% confidence interval (CI). The 95% CI was used to evaluate the probability that the SIR may be greater or less than 1.0 due to chance alone, and was based on the Poisson distribution. If the confidence interval includes 1.0, then the estimated SIR is not considered to be statistically significantly different than 1.0.

Results

While reviewing the submitted cases, the VCR found that the cases lacked key details such as date of birth and age at diagnosis. Using the available information, we explored all possible combinations to query the registry and successfully matched three out of the four cases listed in the request.

The three identified cases were located near the Salisbury community, though not precisely within its defined boundaries using Google Maps and Neighborhood Scout. Additional cases that met the geography, population, and time frame were also included for the analysis. During this period, there were fewer than 16 reported cases of Brain and Other CNS cancers within that ZIP code. In accordance with CDC guidelines and to protect patient confidentiality, the VCR suppresses reporting of cancer counts and rates when they fall below 16.

ZIP Code	Diagnosis Year	Cancer Site	Counts
23113	2019-2023	Brain and (central nervous system)	<16

Analysis Findings

Below is a table presenting the SIR results. In this analysis, the SIR for ZIP code 23113 was 1.3 when compared with Chesterfield County and 1.5 when compared with the Commonwealth of Virginia. To assess statistical significance, we calculated the 95% Confidence Intervals: 0.7 to 2.2 for Chesterfield County and 0.8 to 2.5 for Virginia. Because both intervals include 1.0, the results are not considered statistically significant, which suggests that the observed number of Brain and Other CNS cancers in ZIP code 23113 between 2019-2023 do not differ significantly from the expected number when compared with Chesterfield County and statewide.

Standard Incidence Ratio (SIR) Test				
Comparison	**Cancer Site**	**Observed # of Cases In Zip 23113**	**SIR**	**95% C.I.**
Chesterfield County	Brain and Central Nervous System	<16	1.3	(0.7, 2.2)
Commonwealth of Virginia	Brain and Central Nervous System	<16	1.5	(0.8, 2.5)

Interpretation and Summary

The goal of this investigation by the VCR was to determine whether there was an increased incidence of Brain or Other CNS cancer in ZIP code 23113 encompassing the Salisbury community, and if so, to assess whether additional investigation to determine a common cause, such as an environmental exposure, should be undertaken. Based on the statistical analysis of the cases reviewed, Brain and Other CNS cancer rates analyzed in this area are not elevated. Therefore, the cases assessed from 2019-2023 do not meet the definition of a cancer cluster. Given this and in alignment with CDC guidelines, assessment of environmental risk factors and additional epidemiological investigation into a common environmental exposure was not pursued.

When investigating a suspected cancer cluster, it is not uncommon for several people in a relatively small area to develop cancer around the same time. The development of cancer is a complex and not fully understood process. Given the differences between the various types of cancer and the complexity of the development of cancer, it is important to be cautious when considering a causal exposure or risk factor.

While more research is needed, we know that cancer is likely related to many factors. These factors include lifestyle, genetics, and exposure to certain chemicals and environmental

pollutants. Cancer can be caused by a combination of these factors interacting in ways that are not yet fully understood. Not all cancer can be prevented, but the best way to minimize risk is to avoid lifestyle factors known to be related to cancer and to participate in routine screening programs to catch cancer in early stages. Examples of these examinations include stool tests, colonoscopies, Pap tests, skin exams, breast self-examinations, and mammography.

VDH thanks you for sharing your concerns with us. The VCR can reopen investigations into a specific area should more information become available, or if routine surveillance give us reason for concern. Feel free to submit a Cancer Cluster Form if you have any further concerns or additional information to report.