FAQs for Scott County Pediatric Cancer Review

What is the Virginia Cancer Registry (VCR)
The Virginia Cancer Registry (VCR) is part of the Virginia Department of Health. It is under the Office of Family Health Services, Division of Population Health Data. VCR collects data or information on people with cancer. These are individuals who are diagnosed in Virginia or a Virginia resident who received care out of the state.

How common is cancer in children?
Nationally, about 1 in 285 children will have cancer before they turn 20. In 2022, the rate of new pediatric cancers was 18.2 per 100,000 children age 0-19. In Virginia, the rate of new pediatric cancers was 13.8 per 100,000 children age 0-19.

What is a cancer cluster?
A cancer cluster is when statistically more people than usual get the same or related cancers over a specific time. The cancers are similar, have the same cause and are from the same location.

How is the Lenowisco Health District related to this investigation?
The Lenowisco Health District (LHD) is one of 35 health districts in Virginia that is part of the Virginia Department of Health. LHD provides services to help improve the health and well-being of the counties of Lee, Wise and Scott as well as the city of Norton. LHD has worked closely with the Cancer Registry and the community on this investigation.

Investigation Process

What defines a cancer case that is included in this investigation?
To meet the case definition for this investigation, the patient had to:

- Live in a specific area. For this investigation, the specific area was defined as Scott County.
- Between the ages of 0 and 19.
- The case must have had a confirmed diagnosis between the years 2014 and 2023.

How many cases were evaluated in this investigation?

- Lenowisco conducted a survey and received 24 responses from Scott, Lee and Wise counties. The survey identified that the largest concentration of cases was in Scott County.
- Since the largest concentration of cases was in Scott County, the investigation focused on that specific geographic area. The investigation identified 12 cases in Scott County.

- Of the 12 cases identified in Scott County, five met the case definition for inclusion in the analysis.
- The Cancer Registry reviewed existing registry data and identified three additional cases that met the case definition.
- In total, eight cases were included in the 2014-2023 analysis—five that met the case definition which were identified in Scott County and three cases, already in the registry.

Why weren't all reported cases included?
Cases were not included in the investigation if:

- The case didn't meet the case definition
    - Diagnosed before 2014 or after 2023.
    - Didn't live in Scott County
- Diagnosis couldn't be confirmed.
- Reported information didn't match official records.

Why weren't 2024 and 2025 cases analyzed?
Cancer data takes time to be finalized.

- Must verify information
- Must determine whether case(s) was reported correctly and accurately
- Must exchange data with other state registries
- Must review and analyze case(s) reported.

Cancer Registries throughout the country have a two-year delay. Data for 2024 and 2025 will be reviewed once data are 90% complete.

What information was reviewed for each cancer case?
VCR staff reviewed each patient's medical reports in the registry to confirm the correct type of cancer, where the cancer started within the patient, and when it was diagnosed. This review included doctors' notes and test results to ensure accuracy.

Why is it important to confirm where the cancer started?
Cancers can spread from one organ to another. For this review, it is necessary to review where the cancer originated in the patient, not where it later spread.

Why did you focus on Scott County?
A survey was conducted, and a total of 24 responses were received from Scott, Lee, and Wise Counties, with half reported from Scott County residents. Since this type of investigation requires us to focus on a specific area, we analyzed data from Scott County.

How were cancers that spread handled?

If cancer spread from another organ, it was counted as the original cancer type, not the location where it spread.

How were repeat cancer diagnoses handled?
If a child had the same cancer diagnosed again later, only the first diagnosis date was used.

Results

What is the Standardized Incidence Ratio (SIR)?
The SIR compares the number of cancer cases of a specific type seen in Scott County to the number expected for that same cancer type, which is based on cancer rates across Virginia. This is the first step to analyze cases. The CDC recommends the step in its guidelines for investigating potential cancer clusters. More information can be found here: https://www.cdc.gov/cancer-environment/media/pdfs/Standardized-Incidence-Ratio-Fact-Sheet-508.pdf.

What does an SIR number mean?
A SIR of 1.0 means cases are as expected. Below 1.0 means fewer cases than expected. Above 1.0 means more cases than expected.

What did the investigation reveal about the cases analyzed?
The investigation found that of the survey cases reviewed:

- 75% were male
- 75% were diagnosed under age five.
- Four families reported cancer history and two reported genetic conditions.
- Six different types of cancers were reported.
- Five met criteria for inclusion

Why aren't different cancer types combined when analyzed?
Since cancer is many different diseases, we cannot analyze all types of cancer together as one group. Different cancer types also occur at different frequencies, as there are several factors that may contribute to the development of cancer. So, it is important to consider the number of each type of cancer. Sometimes, different cancer types can be grouped together for analysis because they share a scientifically proven common cause or specific exposure. This was considered for the Scott County cancer cluster analysis. However, on review of published research, the cancer types investigated did not share a scientifically proven common cause or specific exposure to justify grouping multiple cancer types together for analysis.

What did the statistical analysis show?
The SIRs for each cancer type in this investigation were not found to be statistically significant,

as the statistical range, called a 95% confidence interval, included 1.0 for each cancer type. In other words, the observed number of cancers for each cancer type analyzed in Scott County is not different than the expected number of cancers for each cancer type. This means that the pediatric cancer rates of each type in Scott County were not higher than expected and does not suggest a cancer cluster from 2014-2023.

How does one know if results are meaningful?
A statistical range called a 95% confidence interval was used. If the range includes 1.0, results are not considered statistically different from expected. The wider the confidence interval, the more variability there is and the less confidence you have that the estimated SIR is the true SIR.

Why was a second statistical test used?
Because small case numbers can affect reliability, a second test (Fisher's Exact Test) was used to confirm results, which is used when there are small case numbers.

What did the second test show?
It confirmed that cancer rates did not differ from statewide rates, as the p-value, which is used to determine statistical significance, was found to be >0.05 for the reported cancer types. The p-value can be interpreted as the probability that the data support that there is no difference in cancer when compared with Virginia. When the p-value is above a standard cut-off of 0.05, the more confidence that there is no difference.

Environmental Concerns

Were environmental causes reviewed?
Yes. Radon, drinking water, and industrial site concerns were reviewed. Survey results were also reviewed to look for common environmental exposures. Mapping of cases was also conducted. A literature review of environmental exposures and childhood cancer (for the cancer types observed) was also performed. These steps did not lead to any environmentally related hypothesis to test further.

What is radon?
Radon is a colorless, odorless gas that can increase lung cancer risk. Evidence linking it to childhood cancer is limited and inconclusive.

Is radon common in Scott County?
Like other areas of the Commonwealth, Scott County has been designated as high risk for radon by the Environmental Protection Agency. The higher risk is primarily due to the natural geology of the area. A map of radon test results between 2016-2024 are found on our website: https://www.vdh.virginia.gov/environmental-public-health-tracking/radon/radon-testing-results/

How do you know if radon is a problem in your home?
The only way to know how much radon is in your home is to test for it. The Environmental Protection Agency (EPA) says that homes with radon levels greater than 4 pCi/L should be fixed. The EPA also says that action should be taken in a home when radon levels are between 2 pCi/L and 4 pCi/L. It is recommended that homes be retested for radon every 2-3 years. Additional information on radon including how to find professional testers and/or mitigators can be found here: https://www.vdh.virginia.gov/radiological-health/indoor-radon-program/testing/

What was found about public drinking water?
All public water systems currently meet safety standards.

Is Scott County's public drinking water safe?
Yes, based on current monitoring data.

What about private wells?
Private well owners are responsible for water quality testing. For information related to testing of private well water go to: https://www.vdh.virginia.gov/environmental-health/private-well-program/ and open the tab labeled "Testing My Private Well Water."

Can VDH test private wells?
No, but VDH can help interpret results and connect residents to labs.

Were industrial sites reviewed?
Yes. There was not enough evidence to link industrial sites to cancer risk.

Summary

Was this considered a cancer cluster?
No. Cancer rates did not meet the CDC definition of a cluster for 2014-2023. Specifically, we did not see an increased rate of reported cancer types than expected.

Why wasn't further investigation done?
Because no increase or unusual pattern of cancer was identified at this time.

Will future cases be reviewed?
Yes. VDH will continue reviewing 2024 and 2025 cases as data become more complete.

What should community members do now?
Follow standard public health recommendations: test homes for radon, test private wells, and stay informed. These recommendations haven't changed in light of this cancer investigation.

- VDH Indoor Radon Program: https://www.vdh.virginia.gov/radiological-health/indoor-radon-program/

- VDH Private Well Program: https://www.vdh.virginia.gov/environmental-health/private-well-program/
- ASK Childhood Cancer Foundation: https://www.askccf.org/
- Blood Cancer United (formally Leukemia and Lymphoma Society): https://bloodcancerunited.org/
- Coalition Against Childhood Cancer: https://www.cac2.org/
- National Cancer Institute: Childhood Cancers: https://www.cancer.gov/types/childhood-cancers

Who can community members contact?
Lenowisco Health District at scottcancerinfo@vdh.virginia.gov