Citizen's Guide

Expected Number of Primary Malignant and Non-Malignant Brain and Other Central Nervous System Tumors Among Students and Employees at Colonia High School in Woodbridge, NJ

Executive Summary

The report provides the expected numbers of primary malignant and non-malignant brain and other CNS tumors among students, staff, and teachers at Colonia High School in Woodbridge, New Jersey who attended 1968 through 2021. The expected numbers were calculated using rates from the New Jersey State Cancer Registry (NJSCR).

General information on primary malignant and non-malignant brain and other central nervous system tumors are described in the report. In this companion report, we provide an overview and summary of the methods and key findings from the report.

Expected Number Among Students over 1968 to 2021:

- Based on 2015 to 2019 state rates, the total expected number of primary brain and other central nervous system tumors among students is 105.
- Based on 2004 to 2019 state rates, the total expected number of primary brain and other central nervous system tumors among students is 98.

Lifetime Expected Number Among Teachers and Staff:

- Based on 2015 to 2019 state rates, the total expected number of primary brain and other central nervous system tumors among teachers and staff is 14.
- Based on 2004 to 2019 state rates, the total expected number of primary brain and other central nervous system tumors among teachers and staff is 13.

Key Concepts

- *An incidence rate* refers to the rate at which the number of new cases occur per a defined number of people per over a specified period of time.
- *A cohort* is a population of individuals that are at risk.
- *The age-specific incidence rates* for primary brain and other CNS tumors were obtained from the New Jersey State Cancer Registry (NJSCR). In general, the incidence rate of all cancers increases with advancing age, and this is true for brain and other CNS tumors. Therefore, using age-specific incidence rates is very important when looking at cancer rates because the risk of cancer is dependent on age.

- *Person-years* is an estimate of the actual time-at-risk among a cohort. As time passes and - people age, members of the cohort contribute time into different age groups. This is important in epidemiology as the age-specific rates of disease are multiplied by the number of people who contributed time in each age group. For example, a 14-year-old who enters the school in 1990 would have the incidence rate of that age group applied for that year. In 2000 that same individual (and other people in the cohort) would have the incidence rate of a 34-year-old applied to their group.

Analysis Overview

The analysis described below is focused on non-malignant and malignant primary brain and other central nervous system (CNS) tumors. We calculate the expected number of incident brain and other CNS tumors separately for two cohorts. The cohort includes: 1) students who attended and 2) teachers and staff who worked at Colonia High School during the time period of 1968 through 2021.

Students Risk Approach

- The number of Colonia High School students to be used in the analysis was defined as the number of first-year students (cohort) entering the school each year from 1968 through 2021.
- The risk for each cohort to develop a brain and other CNS tumor was calculated based on NJSCR rates for primary brain and central nervous system tumors and the time period that they are at risk for developing these tumors.
- The expected number among each cohort was calculated by multiplying the number of people in that group by the risk among this cohort.
- The total expected number was calculated by adding the expected numbers across the cohorts.

Students Rates Approach

- The age-specific rate is multiplied by the number of the people at risk in each age group as defined by the person-years described above.
- The total expected number was calculated by adding the expected numbers across all age groups.

Teacher and Staff Risk Approach

- For teachers and staff, we are not able to define an age-specific cohort or calculate age and time-specific risk in the cohort because we do not know the age or year of entry into the cohort of all former and current teachers and staff.
- The risk (probability) that a person will develop a malignant or non-malignant brain and other CNS tumor during their lifetime was calculated based on the incidence rate among ages 20 and older from the NJSCR. This assumes a person entered the workforce at Colonia High School at age 20.
- The expected number was calculated by multiplying this risk by the estimated population of former and current teachers and staff.