

## 2020 NPCR NORTH CAROLINA CENTRAL CANCER REGISTRY SUCCESS STORY

### COVID-19 Impact on Public Health

As the COVID-19 pandemic took its course, there is evidence that cancer patients are disproportionately affected by the new disease, from new barriers and challenges in receiving oncology care to an increased risk of poorer outcomes. Identifying unusual changes and differences in the patterns of cancer incidence and cancer care are long-stated, well-established goals of the NC CCR. The NC CCR has developed a process that will allow the linkage of NC CCR data to NC COVID-19 test data. Identifying NC cancer cases that have tested COVID-19 positive and analyzing such cases will guide public health leaders and the cancer surveillance community to understand the risks and barriers associated with COVID-19 and cancer outcomes.

STORY TITLE: Data Linkage Between the NC CCR and the COVID-19 Tested Positive Cases in North Carolina

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### SUMMARY

The North Carolina Central Cancer Registry data were linked with the NC COVID-19 tested positive cases to understand the risk and morbidity of COVID-19 in cancer patients and survivors. The objective of this linkage was to compare across cancer types to determine which patients and cancers are at higher risk for problems with their cancer because of the risk of a COVID-19 diagnosis and understand the risk factors associated with a COVID-19 diagnosis. The cancer cases that also tested positive for COVID-19 were analyzed by county, primary site, gender, race and ethnicity, age groups, stage at diagnosis, and insurance status at the time of their cancer diagnosis.

### CHALLENGE

There is a 6-month delay between cancer diagnosis and reporting to the NC CCR; therefore, complete 2020 cancer data was not available at the time of the data linkage. The data linkage included COVID-19 testing data from March 2020 through September 2020 and NC CCR data from 1990 through 2019 diagnoses years. Therefore, the analyses and the results presented are focused only on the preliminary descriptive analyses of cancer patients diagnosed from 1990 to 2019, who tested positive for COVID-19.

### SOLUTION

To better understand the impact of COVID-19 on cancer screening, diagnosis, surgery and treatments, a follow up data linkage will be conducted during the fourth quarter in 2021 (when about 90% of the 2020 diagnosis data are reported to the registry). The follow up linkage will

focus on analyzing the treatment data to understand if there were delays in treatment and which cancers were most affected. Further, to help identify COVID-19 diagnoses among cancer patients, data reporters are being trained to document COVID-19 test results and treatment delays in case reports, and to include COVID-19 specific data items effective with 2021 diagnoses. Lastly, the NC CCR data will be linked with the state death file to confirm COVID-19 as the Cause of Death.

## RESULTS

The NC CCR and the COVID-19 datasets were matched using the CDC's LinkPlus software. The datasets included 1,517,191 cancer diagnoses from 1990-2019 diagnosis years and 142,575 distinct COVID-19 tested positive cases from March 2020 through September 2020. The 5,496 cancer cases that matched were tested COVID-19 positive. The matched cancer cases were analyzed to present some basic descriptions of cancer cases that were tested COVID-19 positive by county, primary site, gender, race and ethnicity, diagnosis year, age-groups, stage at diagnosis and by insurance status.

- County at Diagnosis: Out of the 100 counties in North Carolina, Mecklenburg County had the highest percentage (11%) of cancer cases that were tested positive for COVID-19 followed by Wake County (7%), Guilford County (4%), followed by Durham and Forsyth Counties at 3%.
- Primary Site: Female breast (21%), prostate (17%), colorectal (9%), melanoma (8%) and endocrine cancers (4%) were the top five cancer sites among the cancer cases tested positive for COVID-19.
- Gender/Race/Ethnicity: 54% of the cancer cases tested COVID-19 positive were women, of them 35% were white females and 18% were minority women. Of the 46% of males with a cancer diagnosis tested positive for COVID-19, 15% were minority males compared to 30% of white males. The racial distribution of the cancer cases tested positive was 66% whites compared to 29% Blacks.
- Diagnosis Year: Most of the cancer cases tested positive for COVID-19 were diagnosed during 2015-2019.
- Age at Diagnosis: Cancer cases with age at diagnosis between 60 and 64 years had the highest rate of testing COVID-19 positive (14%); compared to cancer cases diagnosed at 80+ years had one of the lowest rates of COVID-19 at 4%.
- Stage at Diagnosis: For the cases that tested positive for COVID-19, 53% of the melanoma cases were diagnosed at In Situ stage; 60% of the female breast cancer cases and 77% of the prostate cancer cases were diagnosed at localized stage; 42% of the colorectal cancer cases were diagnosed at the regional stage whereas 35% were diagnosed at the localized stage. Lung cancer cases that tested positive for COVID-19 were distributed across all stages - local, regional, and distant.
- Insurance Status: 31% of the cancer cases that were tested positive for COVID-19 had private insurance compared to 33% who had Medicare and 6% were covered under Medicaid.

## SUSTAINING SUCCESS

The NC CCR will be closely monitoring incoming cancer cases for documentation reflecting COVID-19 in the cancer case reports. The NC CCR will be linking updated COVID-19 testing data and death data with the registry data at least once a year for the next few years to better understand the impact of COVID-19 on cancer cases.

Further, the NC CCR will evaluate if there was delayed delivery of care (surgery and ancillary treatment) for patients diagnosed with female breast, prostate, colorectal, and endocrine cancers as these were among the top cancer sites that tested positive for COVID-19. In addition, the stage at diagnosis will be evaluated to determine if cases are being diagnosed at a later stage.

## REGISTRY CONTACT INFORMATION

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