

# 1

## *Executive Summary*

### *1.1 Introduction*

This report summarizes fifty years of data on cancer among Alaska Native (AN) people. Cancer is the leading cause of death among AN people, accounting for over a fifth of all deaths.<sup>1</sup> AN people also experience a different burden of cancer than other US populations, with lower rates of some cancers but much higher rates of others.<sup>2</sup> In 1974, the Alaska Native Tumor Registry (ANTR) was established to investigate the unique pattern of cancer among AN people. Since 1999, the ANTR has been a full member special population registry under the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) program. Today, the ANTR continues to serve AN people as a SEER-supported program at the Alaska Native Tribal Health Consortium. We collect cancer information for all Alaska Native and American Indian (ANAI) people living in Alaska at the time of their cancer diagnosis, and use this information to further our understanding of the burden of cancer among this population. Data collected by the ANTR have been used for a variety of purposes, including to support research; provide information to regional Tribal Health Organizations for cancer planning; and support clinical policy decision making. Every five years, the ANTR publishes a report on cancer among Alaska Native people, and this edition of the report also celebrates fifty years of cancer surveillance to benefit Alaska Native people.

#### *1.1.1 Data Censoring*

For patient privacy, no cell sizes <5 are presented in this report. Furthermore, no rate information is given where <5 cases were diagnosed, due to lack of numbers required to calculate statistically stable rates. Where necessary (e.g., for regional and mortality information), we have calculated frequencies and rates for longer time-periods, in an attempt to present as much of the available data as possible. Alternatively, in some chapters, we only present data on the leading cancers, for which there were enough available data without censoring.

### 1.1.2 US White Data

Incidence data for US White (USW) people come from the SEER 9 database,<sup>3</sup> which includes data from the following cancer registries: Connecticut, Detroit, Georgia, San Francisco-Oakland, Hawaii, Iowa, New Mexico, Seattle-Puget Sound, and Utah. Data from these registries are only available for the years 1975–2017. Therefore, in five-year data, data for USW include only the years 2014–2017. For longer term trends, data for USW include the years 1975–2017.

### 1.1.3 Childhood Cancers

In this report the term “men” includes boys (younger than adults) and the term “women” includes girls (younger than adults). Cancer is predominantly an adult disease; however, we do acknowledge that children are also diagnosed with cancers and are not excluded from the data.

## 1.2 Data Summaries

### 1.2.1 Leading Cancers

The leading cancers among Alaska Native people are presented in Chapter 2 (pg. 27) of this report. During the five-year period 2014–2018, there were 2,401 cases of invasive cancer diagnosed among AN people, which was an increase compared to the 2,123 diagnosed during the previous five-year period 2009–2013. From 2014–2018, the most commonly diagnosed cancers were female breast (340 cases, 14% of all cancers), colorectal (405 cases, 17% of all cancers), lung and bronchus (373 cases, 16% of all cancers), prostate (126 cases, 5% of all cancers), and kidney and renal pelvis (150 cases, 6% of all cancers). This pattern is identical to the previous five-year period (2009–2013) as well as the fifty-year period 1969–2018.

Among AN men only during 2014–2018, there were 1,135 cases of invasive cancer diagnosed, compared to 957 during the previous five-year period 2009–2013. From 2014–2018, the most commonly diagnosed cancers in men were lung and bronchus (187 cases, 16% of all cancers), colorectal (198 cases, 17% of all cancers), prostate (126 cases, 11% of all cancers), kidney and renal pelvis (94 cases, 8% of all cancers), and stomach (51 cases, 4% of all cancers). Leading cancers for the fifty-year period 1969–2018 were identical.

Among AN women, there were 1,266 cases of invasive cancer diagnosed, compared to 1,166 during the previous five-year period 2009–2013. From 2014–2018, the most commonly diagnosed cancers in women were breast (340 cases, 27% of all cancers), colorectal (213 cases, 17% of all cancers), lung and bronchus (186 cases, 15% of all cancers), thyroid (60 cases, 5% of all cancers), and kidney and renal pelvis (56 cases, 4% of all cancers). While leading cancers for the fifty-year period 1969–2018 were very similar, in the fifty-year incidence we observed cervical cancer as the fourth leading cancer, while thyroid was the ninth most common cancer diagnosed.

Chapter 2 (pg. 27) also gives incidence of leading cancers by age. Incidence of

cancer (all sites) increased with age; this pattern was generally consistent across all cancer sites. There were some exceptions to this pattern. Breast (women), kidney and renal pelvis, stomach, thyroid, and corpus uteri (women) cancer rates were highest in those aged 60–79 years.

### 1.2.2 *Frequency of Diagnosis by Site, Age, and Stage*

Stage information is given in Section 2.4 (pg. 56) of this report. We examined stage at diagnosis for all sites and the ten most common cancers. The majority of cancers (40%) were diagnosed at local stage, with 24% diagnosed at regional stage, and 30% at distant stage. However, the pattern varied by cancer site. For female breast cancer, almost two thirds (64%) of cases were diagnosed at local stage, with 27% at regional stage and 9% at distant stage. The pattern was somewhat similar among prostate (men) cancers, with 57% diagnosed at local stage, 12% at regional stage, and 21% at distant stage. Among colorectal cancers, 39% were diagnosed at local stage, 35% at regional stage, and 24% at distant stage. Among the leading cancers, lung, pancreatic and stomach cancers had the largest proportion of cases diagnosed at distant stage. For lung cancers, 61% were diagnosed at distant stage, with 22% at regional stage and 19% local stage. For pancreatic cancers, 54% were diagnosed at distant stage, with 24% at regional stage and 14% local stage. Finally, among stomach cancers, 60% were diagnosed at distant stage, with 16% at regional stage and 22% local stage. A very small proportion of thyroid cancers were diagnosed at distant stage (1.2%), with 36% diagnosed at regional stage, and 63% at local stage.

### 1.2.3 *Incidence*

Incidence by cancer site is given in Chapter 3 (pg. 69) of this report. During the most recent five-year period, the cancers with the highest incidence among AN people were cancers of the colon and rectum (Incidence Rate (IR): 404/100,000), lung cancers (IR: 360/100,000), and breast cancer (women only; IR: 346/100,000). This pattern of leading cancers is identical to that presented in our prior 45-year report.

Where data were available, we also compared average annual age-adjusted cancer incidence rates among AN people to those among USW for the same time-periods. Such comparisons help us to describe similarities and differences in cancer patterns, which in turn can help identify areas of strength, and opportunities for improvement. Overall, the incidence of cancer (all sites) was similar among AN people and USW (Rate Ratio (RR): 1.1) during the last five years. We were unable to make comparisons with the fifty-year data, as we only have data for USW going back to 1975.

Several leading cancers were more common among AN people than among USW, including colorectal (RR: 2.4); lung and bronchus (RR: 1.6), and kidney and renal pelvis cancers (RR: 1.8). We also observed differences in other, less common cancers. The greatest difference we observed was for cancers of the nasopharynx. While these cancers are diagnosed relatively infrequently (there were 28 diagnosed

2014–2018), the incidence rate was 15.2 times higher among AN people compared to USW. Other cancers that were more common among AN people include penis (RR: 4.4); Kaposi sarcoma (RR: 3.9); stomach (RR: 3.0); esophageal (RR: 2.1); gallbladder (RR: 2.1); and cervix uteri (RR: 1.9).

There were also several cancers that were less common among AN people than among USW, including cancers of the prostate (RR: 0.6); urinary bladder (RR: 0.6); eye and orbit (RR: 0.6); brain (RR: 0.5); Hodgkin lymphoma (RR: 0.5 extranodal, 0.6 nodal); non-Hodgkin lymphoma (RR: 0.6); and melanoma of the skin (RR: 0.2).

#### 1.2.4 Incidence Trends

While comparisons to other populations, such as USW, can be helpful, it is also very informative to look at how rates vary just among AN people. Examining trends in cancer incidence over time can show us whether and how we are making progress; where we are being successful in our efforts to decrease cancer burden among AN people; and where we still have room to improve. Having fifty years of surveillance data for AN people allows us to examine long-term trends. Here we discuss trends in cancer (all sites), as well as the ten leading cancer sites:

*Cancer (all sites)* Age-adjusted incidence rates of all cancers (men and women combined) increased slightly from the 1970s to the late 1990s. Since that time, rates have been fairly stable, although there have been some random variations, as is expected.

*Breast cancer (women)* During the 1970s and 1980s, AN women experienced increasing breast cancer rates. However, since the mid 1990s rates have remained generally stable, and similar to those seen among USW women. The five-year average annual age-adjusted rate is slightly lower than in our previous five-year report.

*Colorectal cancer (CRC)* rates have remained relatively constant over the fifty years of surveillance. In contrast, USW have seen declines in their CRC rates, meaning that the difference in rates has been increasing over time. AN people experience among the highest rates of CRC in the world. Rates have not substantially changed since our last five-year report.

*Lung cancer* rates appeared to consistently increase between the 1970s and the late 1990s, after which time they have been relatively stable, perhaps trending towards a decline. Rates have not substantially changed since our last five-year report, and remain higher than those observed among USW.

*Prostate cancer (men)* rates have remained relatively stable among AN men since the last five-year report, and are lower than those observed among USW men. In both AN and USW men, there was an increase in rates in the 1990s; this increase (and subsequent decrease) was more pronounced among USW men than AN men.

*Kidney and renal pelvis cancer* rates have slowly and slightly increased from the 1970s to present. Throughout the period of surveillance, rates have remained higher among AN people than among USW.

*Stomach cancer* rates have been substantially higher among AN people than USW for the fifty years of surveillance; in the most recent five-year period rates slightly decreased relative to the the prior five-year period (2009–2013), but they remained higher than among USW.

*Pancreatic cancer* has shown small but steady increases over the fifty-year period of surveillance. There was a non-significant increase in rates in the most recent five-year period. Pancreatic cancer rates are now slightly higher among AN people than USW.

*Cervical cancer (women)* rates were very high among AN women during the 1970s and early 1980s, but since that time have substantially decreased. We saw a slight but non-significant increase in the most recent five-year period. Cervical cancer rates are higher among AN women than they are among USW women, among whom rates have been decreasing for over two decades.

*Corpus uteri (women)* or uterine cancer rates are lower among AN women than USW women. While there had been an increasing trend in rates between the 1970s and early 2000s, there was a decline in rates for the most recent five-year period.

*Urinary bladder* cancer rates have remained steady among AN people for the fifty years of surveillance, with the exception of a slight dip in the 1990s. Urinary bladder cancer rates are lower among AN people, relative to USW.

### 1.2.5 Mortality

Chapter 5 (pg. 117) presents information on the leading causes of cancer death. In the most recent five-year period, lung cancer remained the leading cause of cancer death, followed by cancers of the colon and rectum, and breast cancers (women only). This pattern was identical to that which was reported for the previous five-year period.

We also compared mortality rates among AN people to those among USW. Among our leading cancers, lung cancer mortality was 1.3 times higher among AN people, and colorectal cancer 2.8 times higher among AN people. This represents a slightly increased disparity relative to the previous five-year period. Breast cancer (women) rates were not significantly different among AN people and USW. There were several less common cancers for which mortality was higher among AN people than USW. These included cancers of the stomach (RR: 4.5), and esophagus (RR: 1.6). These figures indicated an increase in the disparities between AN people and USW compared to the previous five-year period (2009–2013).

Because numbers of cancer deaths are very small for certain cancer sites, we also examined twenty-five-year cancer mortality rates. This enabled us to generate rates for additional less common cancer sites. During this time-period, rates were higher among AN people than USW for the following additional cancer sites: gallbladder (RR: 2.3), intrahepatic bile duct (RR: 1.8), and liver (RR: 1.5). Rates were lower among AN people for the following additional cancer sites: Melanoma of the skin (RR: 0.2), brain and other nervous system (RR: 0.4), non-Melanoma skin (RR: 0.6), acute myeloid leukemia (RR: 0.6), uterus (RR: 0.7), and ovary (RR: 0.7).

Chapter 6 (pg. 123) presents information on mortality trends for the leading cancers. Overall, there was a non-significant decrease in cancer death between the current and previous five-year periods. Trends varied by cancer site. We observed a 30% decrease in lung cancer mortality between the previous and current five-year periods. Colorectal and female breast cancer mortality did not change, and has remained relatively steady for both cancer sites for the twenty-five years of surveillance. Prostate cancer also remained fairly steady. At the beginning of surveillance, prostate cancer mortality rates were lower among AN men than USW men, but that disparity has closed and now mortality rates are almost identical. Stomach cancer rates slightly (but non-significantly) declined in the most recent five-year period; however, rates remain significantly higher (RR 4.5) than among USW.

### *1.2.6 Regional Information*

Cancer information specific to each Tribal health region is given in Section 2.5 (pg. 67), as well as the entirety of Chapter 7 (pg. 145). For information on how each Tribal health region was defined using census tracts, please see Appendix A (pg. 169): Methods. In Section 2.5, we compare incidence rates for the leading cancers by Tribal health region. There was a lot of variability between Tribal health regions for each cancer site. For example, rates of female breast cancer were highest in the Copper River and Prince William Sound and Southeast regions and lowest in the Arctic Slope and Yukon-Kuskokwim regions. Rates of colorectal cancer were highest in the Norton Sound, Arctic Slope, Northwest Arctic and Yukon-Kuskokwim regions and lowest in the Aleutian and Pribilof Islands, the Kenai Peninsula, and the Kodiak area. Lung cancer rates were highest in the Arctic Slope region and lowest in the Yukon-Kuskokwim region and Northwest Arctic. Chapter 7 (pg. 145) presents incidence trends for each Tribal health region, as well as incidence of the leading cancers, relative to AN people statewide.