Cancer Among American Indian Residents of Montana, 2003-2007

Identifying American Indian Patients in the Montana Central Tumor Registry

American Indians are often misclassified in health records systems, including tumor registries. This underestimates the cancer burden of American Indians. Montana and 45 other states collaborate with the Indian Health Service (IHS) Division of Epidemiology to perform annual records linkages between state tumor registry files and IHS administrative files from 1990 forward. Each year the Montana Central Tumor Registry reclassifies an average of 25 to 30 patients to American Indian through this process. This greatly improves the accuracy of cancer data for American Indian residents of Montana.

Computing Cancer Incidence Rates for American Indians

Montana has a relatively small population overall, approximately 920,000 in 2007. There are fewer than 70,000 American Indian residents of Montana, 7% of the total population, with fewer than 200 cases of cancer per year. Small numbers yield statistically unreliable rates that fluctuate substantially from year to year. Apart from All Sites Combined, the relative standard errors around the incidence rates for American Indians (Table 2) are greater than 25%, indicating a large margin of error around the rate.

Cancer Incidence Among American Indian Residents of Montana

The most common incident cancers among American Indian residents of Montana are the same as those for the state as a whole: prostate, breast, lung and bronchus, and colon and rectum. The incidence rates of prostate and breast cancers among American Indian residents are not statistically significantly different than the statewide incidence rates. American Indian residents have statistically significantly higher incidence rates of lung, colorectal, kidney, stomach, and liver cancers.

The disparities in cancer incidence between American Indian and other residents of Montana are associated with differences in lifestyle and screening participation. Approximately 85% of cases of **lung cancer** are attributable to smoking cigarettes; 54% of American Indian adults in Montana smoke, compared to 14% of White adults in Montana.[1] Smoking is also a risk factor for **stomach and kidney cancers**.

Infection with *Helicobacter pylori* is a risk factor for **stomach cancer**. *H. pylori* is a bacterium that infects the lining of the stomach and causes chronic irritation. Irritation can lead to ulcers and stomach cancer.[2] Among American Indian residents of Montana, the kinds of stomach cancer associated with *H. pylori* account for one half of all cases, while among White residents they account for only one third of all cases. This is consistent with studies of stomach cancer among American Indians in other parts of the United States.[3] *H. pylori* infection is usually acquired in childhood or adolescence and usually lasts throughout life. It is less common in more affluent communities and more common where community sanitation

1 Montana Tobacco Use Prevention Program. 2009. Adult Tobacco Use in Montana. *Results of the 2008 Montana Adult Tobacco Survey*. Helena, MT.
2 McNamara, D, El-Omar, E. 2008. *Dig Liver Dis* epub May 15, 2008.
3 Wiggins et al. 2008. *Cancer* 113(Suppl 5):1225-1233.

Table 2. Cancer Incidence Statewide and Among American Indian Residents of Montana, 2003-2007

	Statewide		American Indian		
	Incidence *	95% CI **	Incidence	95% CI §	
All sites	455.5	449.6 - 461.3	527.5	491.7 - 563.3	†
Prostate	167.6	162.5 - 172.7	134.1	104.7 - 163.6	
Breast (female)	119.5	115.3 - 123.6	121.1	99.9 - 142.3	
Lung and bronchus	64.7	62.5 - 66.9	97.2	81.3 - 113.0	†
Colon and rectum	44.2	42.4 - 46.0	62.7	50.0 - 75.4	†
Uterus	22.5	20.8 - 24.3	26.2	15.6 - 36.8	
Bladder	22.1	20.9 - 23.4	18.9	11.5 - 26.3	
Non-Hodgkin lymphoma	18.1	17.0 - 19.3	21.9	14.1 - 29.8	
Melanoma	17.3	16.1 - 18.4	4.6	1.4 - 7.9	‡
Ovary	13.3	12.0 - 14.7	11.9	5.0 - 18.9	
Leukemia	13.2	12.2 - 14.2	12.2	6.6 - 17.7	
Kidney and renal pelvis	12.3	11.3 - 13.2	23.1	16.5 - 29.8	†
Pancreas	11.1	10.2 - 12.0	13.8	7.7 - 19.8	
Thyroid	10.9	10.0 - 11.8	7.0	3.8 - 10.3	
Brain and other CNS	7.0	6.2 - 7.7	7.5	3.6 - 11.4	
Cervix	5.5	4.5 - 6.4	7.5	2.8 - 12.2	
Stomach	5.4	4.8 - 6.1	14.7	8.9 - 20.5	†
Multiple myeloma	5.3	4.7 - 5.9	8.1	3.7 - 12.5	
Esophagus	4.6	4.0 - 5.2	3.8	0.6 - 7.1	
Liver and bile duct	3.6	3.1 - 4.2	14.2	8.5 - 19.9	†

Sites account for 80% of all cancers statewide and for 85% of all cancers among American Indians.
* Incidence rates per 100,000 population, age-adjusted to the 2000 Standard Population.
** CI = Confidence Interval. True incidence is within this range with 95% certainty.
§ Apart from All Sites Combined, all relative standard errors computed for American Indian incidence rates are greater than 25% of the point estimate.
† Indicates that American Indian incidence rate is statistically significantly higher than statewide incidence rate.
‡ Indicates that American Indian incidence rate is statistically significantly lower than statewide incidence rate.

Is poor and housing conditions are crowded.[4]

Cirrhosis of the liver (chronic inflammation and fibrosis from several causes) increases the risk of **liver cancer**. The most common causes of cirrhosis are alcohol abuse and chronic infection with Hepatitis B or C. Even moderate alcohol consumption in combination with chronic hepatitis can cause cirrhosis. The National Cancer Institute recommends Hepatitis B vaccination to reduce the risk of liver cancer.[5]

Colorectal cancer is almost entirely preventable by endoscopic screening. Among American Indian adults in Montana age 50 years and older, 43% have ever had an endoscopy, compared to 57% of White adults age 50 and older in Montana.[6]

4 Brown LM. 2000. *Epidemiol Rev* 22:283-297.
5 http://www.cancer.gov/pdq/prevention/hepatocellular/HealthProfessinal/page2
6 Montana Behavioral Risk Factor Surveillance System, 2008 Survey. http://74.205.72.25/html/brfss-index.shtml

Cancer survival among American Indian residents of Montana is slightly lower than survival for all residents for patients diagnosed between 1998 and 2002 (to allow time for at least five years of survival) (Figure 3). The lower survival is attributable in part to later stage at diagnosis among American Indian patients, which did not improve between 1998-2002 and 2003-2007 (Figures 4 and 5).