

Chapter 2: Background

Background

What is Colorectal Cancer?

Colorectal cancer (CRC) refers to any cancer that develops in any part of the large intestine (colon or bowel), or the rectum. There are several types of CRC but the majority are adenocarcinomas. CRC develops from tumors called adenomatous polyps or adenomas. A polyp is an abnormal growth and adenomas are tumors. Polyps can develop because of a variety of conditions. For example, people whose diets include large amounts of red meat or preserved or processed meats are more likely to develop polyps. People can also be born with a genetic tendency to develop polyps.

It is important to remember that polyps and adenomas are not cancer. Less than 5% of all adenomas become cancer; some polyps can become cancer if left undetected and/or untreated. It can take five years for a polyp to develop into cancer. The larger the polyp, the more likely and more quickly it will develop into cancer. If a polyp is removed and found not to have cancer, it is called benign. Once a polyp is removed it will not develop into cancer. However, those who have a history of polyps have an increased risk of developing new polyps.

Colorectal cancer, like other cancers, is diagnosed in stages. Stages are used to categorize how much a cancer has spread in the body. There are four CRC stages (I-IV). Stages I and II categorize CRC that has spread throughout different parts of the colon or rectum. Stages III and IV categorize CRC that has spread beyond the colon and rectum to lymph nodes or other organs in the body.

Without treatment, CRC can be fatal. Depending on tumor size, location and likelihood of spread, treatment may include removing the tumor by colonoscopy or removing the portion of the colon affected (by colon resection or colectomy). If the disease is known or likely to spread, additional treatment with radiation or chemotherapy may be recommended.



“Our traditional lifestyle includes healthy low-fat diets, active lifestyles, spiritual priorities, and tobacco used for sacred and not recreational purposes. This can still work for us today to prevent heart disease, diabetes, and cancer.”

– Stella Washines, 2011

Yakama Nation

Courtesy: 2002 President's Cancer

Panel

Because patients of advanced age (75 and older) may have other serious medical problems, sometimes treatment is not recommended; the aggressive treatment of cancer may be too hard on them. In these situations, patients and their families decide whether to treat the cancer.

It is important to know that polyps, adenomas, and CRC can develop without any symptoms. Screening is the number one way to prevent colorectal cancer.

Finding benign polyps and removing them is much easier than treating them after they have become cancer. This is why early testing and detection are important. Everything else about screening revolves around the best and most cost-effective way to find and remove polyps before they become cancer. The importance of starting a CRC screening and prevention program in your community is urgent when you consider that polyps and CRC can develop without symptoms and that screening is the most effective way to prevent CRC. For more information, look at tool 2.1 Colorectal Cancer Screening: Basic Fact Sheet.

Risk Factors

Although anyone can develop CRC, some people more likely to develop CRC due to a number of risk factors. There are modifiable and non-modifiable risk factors for developing CRC. Modifiable risk factors are those that have to do with lifestyle choices, including smoking, food choice, and exercise. Individuals can change modifiable risk factors by changing their everyday behaviors. Non-modifiable risk factors cannot be changed by an individual and include age, sex (biologically determined male or female), and genetics. Genetics are often assessed by reviewing family history or through special genetic testing. Both types of risk factors contribute to the likelihood that an individual may develop CRC. Following is a description of both types of risk factors:

Modifiable Factors for Colorectal Cancer

- ¹Tobacco use- Smoking tobacco is associated with an increased risk of colorectal cancer.
- Physical activity- Exercise is shown to be a protective factor, meaning that the more an individual exercises, the lower his/her risk is for developing CRC. ²While high levels of exercise may potentially decrease this risk by as much as 50%, even moderate physical activity can lower risk.



Nutrition- The American Cancer Society advocates for an overall healthy diet and has dietary recommendations that include limiting consumption of red and processed meats and eating a wide variety of fruits, vegetables and whole grains.

- Obesity- Individuals who are overweight or obese are at an increased risk for developing CRC. ^{3,4} Studies show that obesity (depending on where fat is stored in the body, sex and age) may double CRC risk
- Diabetes- ⁵Type 2 Diabetes is related to obesity, but mounting evidence shows that untreated or unregulated diabetes (due to unstable insulin levels) may increase the risk of CRC. ^{6,7} Type 1 and 2 diabetes are associated with an increased risk of CRC.
- Alcohol consumption- Even moderate alcohol use (e.g., 2-4 drinks per day as a lifetime average) is linked to an increased risk of colorectal cancer.

Non-modifiable Factors for Colorectal Cancer

- Age (50+) - Over 90% of colorectal cancer cases are diagnosed in people ages 50 and over.
- Sex- Sex (male or female) risk overall is equal, but women have a higher risk for colon cancer, while men are more likely to develop rectal cancer.
- Personal history of CRC or adenomatous polyps- Individuals with a previous history of either colorectal cancer or adenomatous polyps are at increased risk for developing new cancers in other areas of the colon and rectum.
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- Personal history of chronic inflammatory bowel disease- Individuals with a history of Crohn's disease or other chronic inflammatory bowel conditions are at an increased risk of developing colorectal cancer.

For more information, see tool 2.2: Risk Factors and Symptoms.



Family History

As identified above, having a family history of CRC or adenomatous polyps is a non-modifiable risk factor. Therefore, obtaining family history from individuals is vital to determining individual risk. Based on family history, an individual may be found to have average, increased, or high risk for CRC. This will factor into determining the type of screening that should be performed, the age at which screening should begin, and how often the individual should be screened. For another look at risks associated with CRC, see tool 2.3, Individual Risk Based on Family History of CRC.

Screening Options & Characteristics of Screening Tests

There are three options for CRC screening that are fully recommended by guideline consensus groups: Fecal Occult Blood Test (FOBT), flexible sigmoidoscopy, and colonoscopy. Family history of CRC and personal risk factors determine individual level of risk and the appropriate test for an individual. Below is a description of each of the three risk levels and the recommended screening tests.

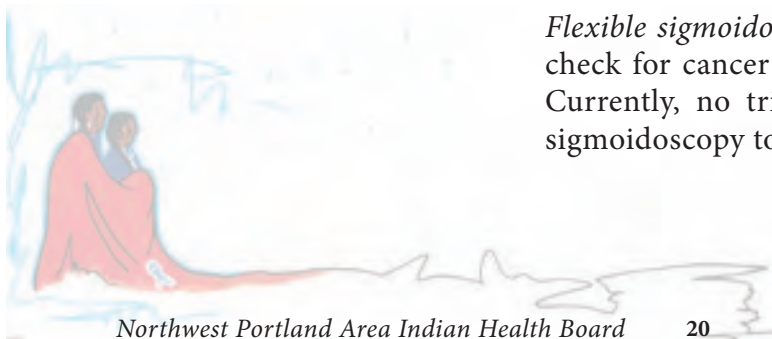
Risk Levels:

- Average: no risk factors, no symptoms
- Increased: CRC or adenomatous polyp in a first degree relative
- High: 8personal history of more than eight years of Crohn's Disease or Ulcerative Colitis or a hereditary (from family) polyp syndrome

Screening Tests:

Fecal Occult Blood Test (FOBT) - An FOBT is a test used to find blood in the stool. Three small stool samples are scraped from three separate bowel movements with a stick and then wiped on closable cards. Those cards are sent to a laboratory for testing. There are two kinds of FOBT tests, the guaiac-FOBT and the immunochemical FOBT (iFOBT or FIT).

Flexible sigmoidoscopy- A flexible sigmoidoscopy is used to check for cancer or polyps in the lower third of the colon. Currently, no tribal clinics in the Northwest use flexible sigmoidoscopy to test for CRC.



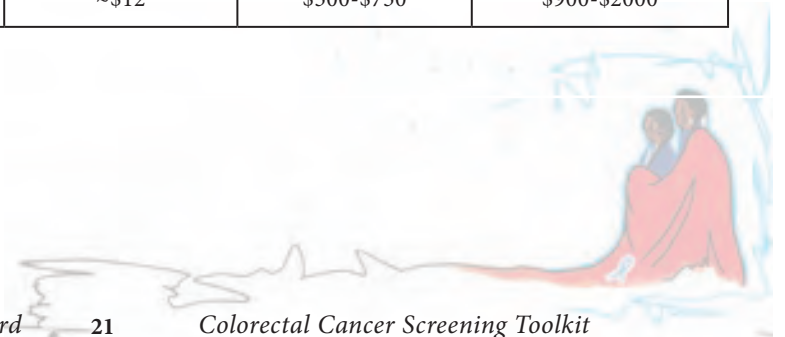
Colonoscopy- A colonoscopy is used to check for cancer or polyps in the entire colon. A colonoscope is a flexible, 30 inch long, ½ inch diameter tube with a light on one end and a lens for viewing on the other end. It is inserted into the rectum. The colonoscope passes through the entire length of the colon. Polyps and other tissue can be removed during the examination to test for the presence of cancer. During a colonoscopy, strong sedatives are given intravenously to allow the patient to sleep through the procedure.

The table below briefly outlines the different screening tests, what they involve, and how much they cost. Tool 2.4, Screening Tests at a Glance, is a detailed description of the characteristics and preparation required for each test, as well as other tests used for screening, and can be found in the toolkit pocket of this chapter. Physician and patient test choice depends on preparation required, test location, the information obtained, cost, availability and risk level.

Screening Recommendations from ACS, USPSTF, IHS

The American Cancer Society (ACS) and the U.S. Preventative Services Task Force, both recommend CRC screening for individuals with average risk of developing CRC. Not all of these tests listed were described above.

	Guiaic FOBT	Immunochemical	Sigmoidoscopy	Colonoscopy
Administered	Home	Home	Clinic or Hospital	Clinic or Hospital
Restrictions	Yes, Food with Red Meat or Citrus (Orange, lemon, etc.) Medications Aspirin, ibuprofen, Vitamin C	None	Yes, no food 24 hours before Only checks 50% of colon	Yes, no food 24 hours before
How specific to finding CRC	95.2% ⁹	95.4% ¹⁰	100% ¹¹	100% ¹²
How sensitive to detecting CRC or adenomas if they exist	33% ¹³	53%-73% ¹⁴	94% ¹⁵	94% ¹⁶
Cost (before insurance)	\$1.50	~\$12	\$500-\$750	\$900-\$2000



Did you know?

The presence of polyps is not necessarily bad. Polyps are not cancer. Some polyps may turn into cancer with time. That is why it is important to have them removed.

Specifically, the ACS recommends that at age 50, individuals follow a course of screening that places them in one of two groups, these groups are as follows:

Group A: Tests that detect polyps and/or cancer

- a flexible sigmoidoscopy every 5 years, or;
- a double contrast barium enema every 5 years, or;
- a CR colonography (also known as a virtual colonoscopy) every 5 years, or;
- a colonoscopy every 10 years

Group B: Tests that primarily find cancer

- a Fecal Occult Blood Test (gFOBT) every year, or;
- a yearly Fecal Immunochemical Test (FIT) every year, or;
- a Stool DNA test (sDNA)

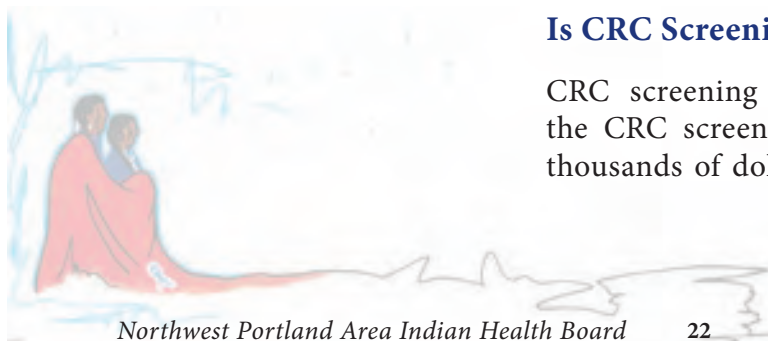
Like the American Cancer Society, the U.S. Preventive Services Task Force (USPSTF) also recommends screening for CRC at certain ages and intervals. The USPSTF recommends screening adults for CRC using FOBT, sigmoidoscopy, or colonoscopy beginning at age 50 and continuing until age 75. According to the USPSTF, screening people in this age group using any one of the three regimens will be about equally effective in preventing CRC. These regimens are as follows:

- annual screening using high-sensitivity FOBT, or;
- screening every five years using sigmoidoscopy, combined with high-sensitivity FOBT, or;
- screening every 10 years using colonoscopy

In the ¹⁷“Strategic Plan to Increase Colorectal Cancer Screening among American Indians and Alaska Natives Executive Summary,” IHS promotes routine screening in general, but not specific CRC screening tests. Thus, in instances where endoscopy access is limited, clinics should focus on the FOBT or FIT screening tests.

Is CRC Screening Cost Effective?

CRC screening has clear cost-saving benefits. ¹⁸Any of the CRC screening methods can save individual patients thousands of dollars. Screening is far less expensive than



cancer treatment. Programs that promote CRC screening are also cost-effective. Programs featuring patient mailings have been found to be the most cost-effective strategy in improving screening rates. For example, one program implemented two patient mailings including an annual stool blood test card;¹⁹ they significantly increased CRC screening rates at a cost of \$42 per patient.

There are many types of screening programs— those based on annual FOBT followed by colonoscopy if positive; those based on flexible sigmoidoscopy every five years with annual FOBT in between; and those based only on initial screening colonoscopy with repeat tests based on findings. Other factors such as ²⁰“patient acceptability, screening compliance, cost, availability of colonoscopy and human resources required should all be considered in deciding which CRC screening program is most appropriate, as well as in providing specifics for cost-effectiveness.” Health care budget considerations may be the bottom-line that dictates which screening test is most likely and fitting possible for clinics or patients.. Although colonoscopies are considered to be the gold standard for CRC screening, screening programs based solely on colonoscopy might not be the strategy of choice for programs with fixed or minimal budgets. ²¹Programs based on annual FOBT may result in more overall benefit, both financially and in patient health, compared with colonoscopy-based programs because of screening feasibility. As one physician said, ²²“the best screening test is the test that gets done.”

Treatment for CRC

Once colorectal cancer is diagnosed, there are four main types of treatment:

- Surgery - surgical removal of abnormal cells/cancerous growth
- Chemotherapy - the use of oral or intravenous drugs to fight cancer
- Biologically targeted therapies - the use of drugs (often man-made proteins called monoclonal antibodies) to attack the cancerous parts of cells
- Radiation therapy - the use of high-energy rays (e.g., x-rays) to shrink tumors or kill cancer cells

Surgery is the most common treatment, particularly in earlier



stages. It is also common to have additional treatments either after surgery or at the same time. The main goal of surgery is to remove the cancerous tumor while chemotherapy and radiation help to prevent the spread or return of cancer. Targeted therapy may be less severe than chemotherapy and is most often used either in conjunction with chemotherapy or by itself if chemotherapy is not effective.

Treatment: Cost-Savings Due to Screening

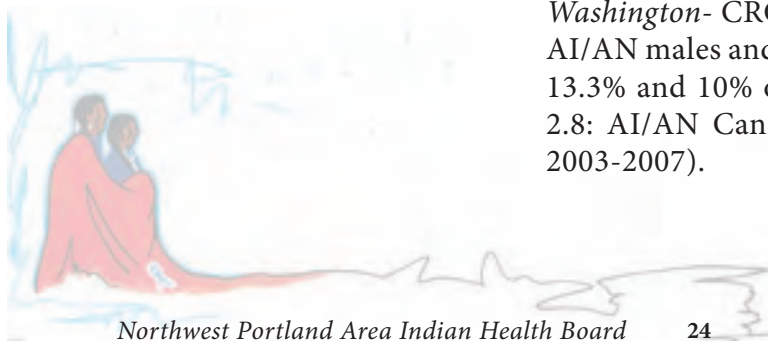
Colorectal cancer treatment can be quite expensive. ²³Even when detected early, the treatment cost for colorectal cancer is around \$30,000 per patient. Late stage CRC treatment is even more expensive at about \$120,000 per patient. The treatment savings of screening go beyond financial considerations; ²⁴colorectal cancer found at an early stage through screening has about an 85-95% cure rate. The later cancer is diagnosed, the lower the survival rate. ²⁵Even cancer diagnosed in stage I has a lower survival rate than screening and prevention.

CRC among Northwest AI/AN

Overall, risk for developing CRC is higher for AI/AN than the rest of the population nationally. However, these rates vary by region and state. True CRC rates in AI/AN communities can be difficult to calculate because of inaccurate race classification and low levels of screening and diagnosis. Inaccurate race classification is when AI/AN are misclassified as another race in public data sources. To correct this, the Northwest Tribal Registry works to improve classification of races and Northwest AI/AN cancer estimates. This corrected data is published and used for educational fact sheets, including tools 2.5- 2.9 in the toolkit pocket of this chapter. Based on this work, a summary of CRC in the Northwest by state is shown below.

Oregon- CRC is the third leading form of cancer among AI/AN males and females in living in Oregon, representing 13.6% and 6.7% of all types of cancer respectively. (See tool 2.7: American Indian and Alaskan Native Cancer Incidence and Screening: Oregon, 2003-2007).

Washington- CRC is the third leading form of cancer among AI/AN males and females living in Washington, representing 13.3% and 10% of all types of cancer respectively. (See tool 2.8: AI/AN Cancer Incidence and Screening: Washington, 2003-2007).

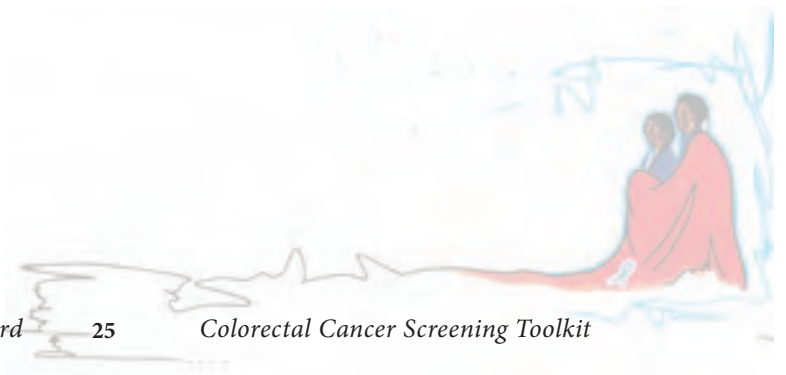


Idaho- CRC is the fourth leading form of cancer among AI/AN males and females living in Idaho, representing 10.9% and 7.8% of all types of cancer respectively. (See tool 2.9: AI/AN Cancer Incidence and Screening: Washington, 2003-2007).

Portland Area- CRC is the third leading form of cancer among AI/AN males and females living in the Northwest Portland Area (OR, ID, WA), representing 13.4% and 8.9% of all types of cancer, respectively. In the 2008 reporting year, only 35 % of AI/AN patients aged 51-80 had CRC screening within the previous year. ²⁶While this is higher than the national IHS average of 29%, it still falls below both the IHS screening goal of 50% and the current U.S. screening rate for non-Hispanic whites (NHW) of 61.6%.

Background Chapter Summary

This chapter described the basics of colorectal cancer, including risk factors for developing it, the main screening tests that detect it, screening recommendations, and treatment for patients diagnosed with CRC. It should be noted that while there is a high incidence of CRC among AI/AN in the Northwest, prevention and early detection through screening could significantly decrease both CRC incidence and mortality.



Tool Box Description

2.1 Colorectal Cancer Screening: Basic Fact Sheet

- The double-sided basic fact sheet describes CRC, risk factors, the importance of screening and types of screening tests. It also shows a simple graphic of the gastrointestinal system.

2.2 Risk Factors and Symptoms

- The Risk Factors and Symptoms sheet lists factors that make an individual at an increased individual's risk to develop of CRC. There is also a description of possible symptoms.

2.3 Individual Risk Based on Family History of CRC

- The Individual Risk chart shows the increased risk based on different family settings.

2.4 Screening Tests at a Glance

- This chart is a detailed description of available tests for CRC screening, associated preparation, how they work, and how frequently they need to be taken.

2.5 AI/AN Cancer Incidence and Screening Idaho, Oregon, and Washington, 2003-2007

- The double-sided Cancer Incidence and Screening sheet shows rates for all cancer prevalence and mortality among AI/AN in the Northwest.

2.6 AI/AN Cancer Incidence and Screening: Oregon, 2003-2007

2.7 AI/AN Cancer Incidence and Screening: Washington, 2003-2007

2.8 AI/AN Cancer Incidence and Screening: Idaho, 2003-2007

- The Cancer Incidence and Screening sheets for specific states has cancer prevalence and mortality rates.
- You can use any of these tools as an education piece to show the prevalence of cancers in your community.

