Chapter 8:

# Clinical Screening Program Preparation

## Clinical Screening Program Preparation

### Introduction

Previous chapters of this toolkit focus on promoting colorectal cancer screening and prevention in tribal communities. This chapter is about Northwest tribal clinics, existing cancer and screening rates, and potential improvement areas for clinics and community health workers, as identified in our focus group and key informant interviews. This chapter includes a brief overview of Indian Health Services' Improving Patient Care (IPC) model, as well as resources for improving CRC screening- and other services- through team-based approaches for patient care, building clinic capacity for prevention, screening and increasing patient tracking. Lastly, examples from two regional clinics that have successfully improved their screening rates will be described in detail.

### Northwest Tribal Clinics

There are 43 federally recognized tribes in the Northwest Portland Area Indian Health Board service area of Washington, Oregon and Idaho. There are 39 tribal clinics in this service area. Each clinic is different and there is a wide range of clinic capacity. Some are large, well-staffed clinics with over 10 full primary care providers (including both doctors and nurse practitioners). Other tribal clinics are extremely small, rural and have primary care providers on a rotating schedule. In Indian country, there is a wide variety in clinic capacity so there is no one, single method for increasing CRC screening. There are many resources, including utilizing the IPC model, that are outlined below, however example success stories may be more effective in guiding your community's clinic in increasing screening rates.

**What are the keys to your clinic's success in colorectal screening ?**

***The Electronic Health Record reminder, puts CRC screening in the face of provider and nursing staff;***

***IFOBT vs. old cards has also become easier for patients because it is only one test;***

***Brightly colored envelopes are used for kits so that they stand-out at home;***

***Having GPRA and IPC objectives help to improve screening;***

***And, also receiving individual feedback regarding the GPRA scores help***

## Overview of Recommended Screening Tests

***Fecal Immunochemical Test (FIT):*** This is a recent improvement over the traditional, guaiac-based FOBT. It uses a different immunochemical process to detect fecal occult blood that is more sensitive than the guaiac-based FOBT. It only requires one sample instead of three, includes a small plastic vial filled with liquid in which the stool sample is placed and does not have the dietary restrictions of the FOBT. Because of these characteristics, the FIT test is preferred over the FOBT for those clinics that offer stool testing for CRC screening. The FIT test is more expensive than traditional FOBT, but improves completion rates by patients. Despite better test performance characteristics, FIT tests have not been shown to be any more cost effective than guaiac-based FOBT[1].

Regardless of which type of stool-based test is used—the traditional FOBT or the newer FIT—it is important to keep in mind that these tests must be repeated annually in order to sufficiently screen patients and that any positive test result must have a complete colonoscopy performed. Pitfalls in stool-based screening include: failure to re-screen annually, failure to adequately educate the patient to collect the sample, failure of patients to return all samples properly or to follow dietary restrictions and failure of clinicians to follow-up on a positive test. For these reasons, and the fact that stool-based screening is not specific for CRC, endoscopic screening for CRC is preferred where cost is not a barrier for average risk patients.

***Flexible sigmoidoscopy (FS):*** This screening method requires a trained endoscopist using a 30cm sigmoidoscope. The patient must undergo a bowel preparation that includes a low residue diet, laxatives and enemas. FS can be performed in an office or clinic setting and requires no anesthesia. The test can visualize adenomatous polyps in the first 30 cm of the rectum and descending colon, where approximately 2/3 of colorectal cancers occur. Adequate screening with this method requires that it be repeated every five years and that any positive examination is followed by a complete colonoscopy. Disadvantages of FS over stool-based tests are the increased need for patients to be educated and motivated to undergo a test that requires bowel preparation and

acceptance of a screening test that is invasive.

***Colonoscopy:*** This screening method is the gold standard against which all other CRC screening tests are measured. Colonoscopy utilizes a 60 cm endoscope that fully visualizes the entire colon and rectum. Colonoscopy also allows for removal of adenomatous polyps, the pre-cursors to cancer, and allows for biopsy of suspicious areas. Unlike flexible sigmoidoscopy, colonoscopy does require anesthesia and must be performed in a clinical setting with adequate anesthesia and recovery services such as an ambulatory surgery suite or hospital. CRC screening with colonoscopy must be repeated every 10 years if no suspicious lesions are found. Screening by endoscopy (FS or colonoscopy) is approximately three times more likely to detect advanced CRC compared with fecal tests[2].

***Other available tests:*** There are other available tests that may be helpful in screening for CRC but at present none of these tests have been recommended by the US Preventive Services Task Force (USPSTF) to screen for or prevent CRC.

*Stool DNA Test:* This test uses a stool sample to screen for cancerous cells. These tests along with tests that detect RNA and certain proteins associated with CRC show promising advantages over the FOBT or FIT tests in that they have increased sensitivity and specificity for detecting malignant cells and in some cases, cells from adenomatous polyps. However, a recent review did not find that these tests were cost-effective compared to currently available screening methods[1]. Further evidence is needed from large clinical trials before these tests can be fully recommended.

*CT Colonography (CTC):* CTC can be a useful option for certain patients who are unable to undergo colonoscopy because of prior surgery or other reasons, but who still meet criteria for screening. CTC produces high-quality, three dimensional images of the entire colon. The preparation required is the same as that for colonoscopy, however there is no requirement for anesthesia. Advantages of CTC include higher patient acceptance of CTC compared to colonoscopy or double contrast barium enema (DCBE) in some studies, increased ability to detect advanced polyps (>10mm) compared to DCBE and decreased rate of missed cancers compared to DCBE. The rate for detection of CRC and advanced polyps is similar to that of colonoscopy,

however colonoscopy is superior in the detection of smaller (< 6 mm) adenomatous polyps and flat lesions (< 3mm in vertical height). The primary disadvantage of CTC is the necessity to undergo a second procedure, colonoscopy, in the event of a positive CTC. The inadvertent findings of extra-colonic pathology, which leads to additional diagnostic tests or procedures, is perceived as both an advantage and a disadvantage. In the case of identification of asymptomatic aortic aneurysm, there could be an advantage in decreased mortality and enhanced cost-effectiveness; while in the case of the identification of other conditions, including other cancers, the cost-effectiveness may be negated by the additional diagnostic and treatment procedures that patients undergo, which may or may not decrease mortality[3].

*Double Contrast Barium Enema (DCBE):* DCBE is another radiologic method for viewing the colon and is still endorsed as a primary screening option by the American Cancer Society, US Multi-Society Task Force on Colorectal Cancer and the American College of Radiology. Because of superior performance of CTC compared with DCBE, The UK Department of Health no longer includes DCBE in its CRC screening program. DCBE requires colonic preparation as do CTC and endoscopy, offering no patient comfort advantages. Another factor affecting DCBE as an acceptable alternative is the relative lack of experience in performing and interpreting DCBE among radiologists in practice today.

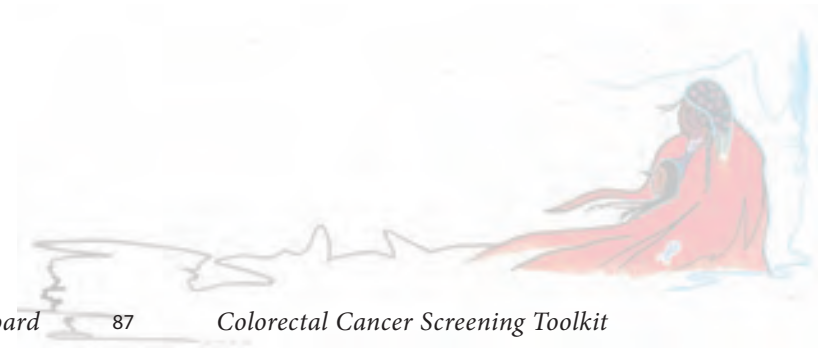
The table below summarizes the recommendations for screening by two consensus guideline groups: 1) the joint statement of the American Cancer Society, US Multi-Society Task Force on Colorectal Cancer; and 2) the American College of Radiology (ACS/USMSTF/ACR) and the US Preventive Services Task Force (USPSTF).

From:

http://www.cancer.org/Healthy/InformationforHealthCareProfessionals/ColonMDClinicansInformationSource/ColorectalCancerScreeningandSurveillanceGuidelines/comparison-of-colorectal-screening-guidelines

# Age to Begin and End Screening, and Test Prioritization

| Recommendation | ACS/USMSTF/ACR[4] | USPSTF[5] |
|---|---|---|
| Age to begin and end screening in average risk adults | Begin at age 50 and end screening at a point where curative therapy would not be offered due to life-limiting co-morbidity | Begin screening at age 50. Routine screening between ages 76-85 is not recommended. Screening after age 85 is not recommended. |
| Screening in high risk adults | Detailed recommendations based on personal risk and family history | No specific recommendations for age to begin testing or type of testing |
| Prioritization of tests | Tests are grouped into those that (1) primarily are effective at detecting cancer, and (2) those that are effective at detecting cancer and adenomatous polyps. Group 2 is preferred over group 1 due to the greater potential for prevention. | No specific prioritization of tests, though recommendations acknowledge that direct visualization techniques offer substantial benefit over fecal tests |
| Stool Testing, Guaiac based FOBT (gFOBT) | Annual screening with high sensitivity guaiac based tests | Annual screening with high sensitivity guaiac based tests |
| Stool Testing, Immunochemical-based FOBT (FIT) | Annual screening | Annual screening |
| Stool Testing, Stool DNA (sDNA) | sDNA is an acceptable option | Insufficient evidence to recommend for or against sDNA |
| Flexible Sigmoidoscopy | Screening every 5 years. Screening every 5 years, with annual gFOBT or FIT is an option | Screening every 5 years, with gFOBT every 3 years |
| Colonoscopy | Screening every 10 years | Screening every 10 years |
| CT Colonography | Screening every 5 years | Insufficient evidence to recommend for or against CT colonography |
| Double Contrast Barium Enema (DCBE) | Screening every 5 years | Not addressed |



## Determining Levels of Screening

Recommendations for CRC screening are based on the natural history of disease and the relative health of the patient. Some patients may have conditions that place them at higher risk to develop CRC or could cause CRC to occur at a younger age. In developing a clinical practice, it is recommended to focus on a stratified CRC screening approach that identifies three risk levels: those at average risk, those at increased risk and those at high risk for CRC. Finally, some patients may be severely ill from co-morbid conditions and may not be candidates for CRC screening. Screening algorithms should be flexible enough to account for this patient group, as well.

***Level 1: Average-risk***

Men and women aged 50—80: Patients in this age group have no first-degree relatives with a history of CRC or adenomatous polyps.

***Level 2: Increased Risk***

Patients at increased risk either have a personal history or a family history of adenomatous polyps or CRC. These patients should NOT be screened with FOBT/FIT or FS tests but should be screened directly with colonoscopy. Because the incidence of adenomatous polyps increases with age, the proportion of individuals who fall into this category also increases with age, from around 20 to 25% at age 50 to 50% by age 75.

***Level 3: High Risk***

Patients at high-risk for CRC have one of three recognized hereditary syndromes that are associated with early onset and high probability of developing CRC. These syndromes include: hereditary nonpolyposis colorectal cancer (HNPCC), familial adenomatous polyposis (FAP), and attenuated FAP (AFAP). Patients with one of these three syndromes should be referred to specialty care for early and more intensive surveillance for CRC. [6]Identifying these patients in the primary care setting can be challenging and requires careful elicitation of family history for any relative with the following:

- CRC or adenomas diagnosed prior to age 50
- Endometrial cancer diagnosed prior to age 50

- Two or more HNPCC-related tumors in a family or in an individual*
- Multiple colorectal adenomas (usually 10 or more) diagnosed over one or more exams

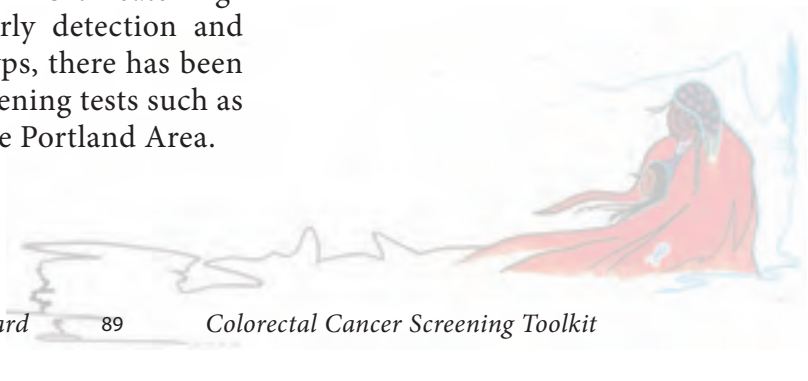
* HNPCC-related tumors include colorectal, endometrial, stomach, ovarian, pancreas, ureter and renal pelvis, biliary tract, brain (most often glioblastoma), small bowel, pancreatic, sebaceous gland adenomas and keratoacanthomas.

## Building An Effective Office-Based CRC Screening Program

To build an effective office-based CRC screening program, it is important to identify what resources are available to support screening (i.e. availability of colonoscopy, financial resources), to clearly delineate who is responsible to initiate screening, to assign responsibility for follow-up of incomplete and positive screening tests and to determine how screening will be forecast and tracked for your patient population. Clear office polices for each of these areas will help achieve success in meeting CRC screening goals.

## Identifying Resources

In the Indian Health system, which includes IHS, Tribal and Urban Indian Health Clinics (I/T/U), colonoscopy is generally not available except through referral to outside providers. Some areas, for example Alaska Area, have a network of trained mid-level providers who can perform flexible sigmoidoscopy. In the Northwest, the I/T/U clinics only provide outpatient services at free-standing ambulatory care clinics. Payment of referral care services is arranged through Contract Health Services (CHS), through other public sources (Medicare, Medicaid) or through private insurance. Because CHS funds can only be used to pay for the care of Tribal members living within the Contract Health Service Delivery Area (CHSDA) of a specific clinic, many AI/AN living in the Northwest may not be covered under this system. It is also a system that is severely underfunded leading to prioritization of care based on the severity of the condition. Under the current prioritization system, most clinics allocate almost their entire CHS budget to patients with Priority I, defined as "life or limb-threatening" conditions. Given the importance of early detection and treatment of CRC and pre-cancerous polyps, there has been interest in considering designation of screening tests such as colonoscopy as Priority I procedures in the Portland Area.



For those patients who are not eligible for CHS funded services, public or private insurance resources can be utilized to pay for CRC screening services. Patients over the age of 65 or who are disabled qualify for Medicare, which does pay for CRC screening (see table below).

## Approved Medicare Colorectal Cancer Screening Tests

| Screening Test | Frequency | Recommended Population | Payment |
|---|---|---|---|
| Fecal Occult Blood Test (FOBT) | Once every 12 months | Average risk | Patient pays nothing for the test, but you generally have to pay 20% of the Medicare-approved amount for the doctor visit |
| Flexible Sigmoidoscopy | Once every 48 months | Average risk or 120 months after a previous screening colonoscopy if remain average risk | Patient pays 20% of the Medicare-approved amount with no Part B deductible. If the test is done in a hospital, outpatient department, or an ambulatory surgical center, you pay 25% of the Medicare-approved amount |
| Screening Colonoscopy | once every 120 months | Average risk or 48 months after a previous flexible sigmoidoscopy | Patient pays 20% of the Medicare-approved amount with no Part B deductible. If the test is done in a hospital, outpatient department, or an ambulatory surgical center, you pay 25% of the Medicare-approved amount |
| | once every 24 months | High risk | |
| Barium Enema | every 48 months | Average risk | Patient pays 20% of the Medicare-approved amount with no Part B deductible. If the test is done in a hospital, outpatient department, or an ambulatory surgical center, you pay 25% of the Medicare-approved amount. |
| | every 24 months | High risk | |

Adapted from information available at: http://www.medicare.gov/navigation/manage-your-health/preventive-services/colon-cancer-screening.aspx?AspxAutoDetectCookieSupport=1

For those eligible for Medicaid, covered procedures may vary from state to state[7]. States participating in Medicaid are not required to provide CRC screening services. Clear disclosure of specific coverage of which CRC screening tests from each state was not readily available in an on-line search. For example, in ID, the Medicaid program provides payment for screening examinations currently recommended by the USPSTF[8,9,10]. In Oregon, state law requires coverage of ACS recommended screening tests; in Washington, the law requires coverage for USPSTF or CDC recommended screenings[9]. It is recommended that providers and patients contact the Medicaid program in their states to be sure that screening costs will be covered. For those who are not eligible for any of the above and are uninsured, additional resources may be available[10].

The conversation about paying for preventive services, like CRC screening, is changing rapidly with the passage of the Affordable Care Act (ACA). This legislation will ensure that CRC screening and other preventive services are provided by all plans participating in the health insurance exchanges *without charging co-pays*. At the time of this publication, State-based health insurance exchanges are not yet available for enrollment. Information about ACA covered preventive services can be found at:

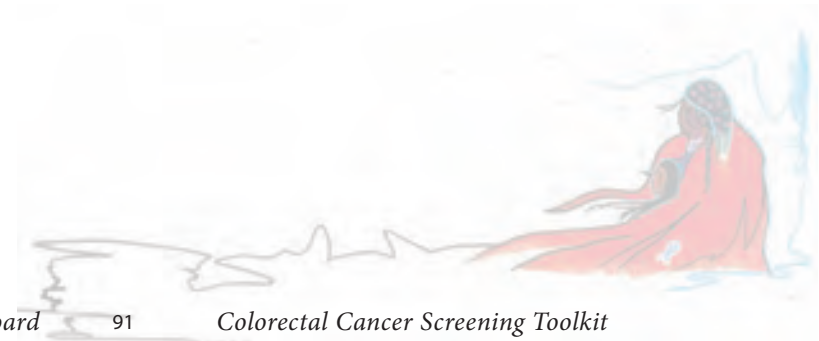
https://www.healthcare.gov/what-are-my-preventive-care-benefits/

For state-specific information, check the following websites for details:

Idaho: http://www.yourhealthidaho.org/

Oregon: http://www.coveroregon.com/

Washington: http://www.wahealthplanfinder.org/



## Clinic Staff Roles and Responsibilities

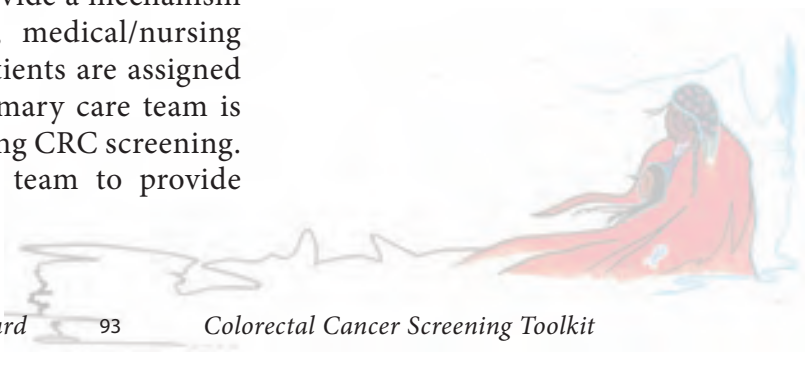
The majority of Northwest I/T/U clinics use RPMS to collect patient information, including information about CRC screening, risk factors and related diagnoses. Although some clinics use commercially available systems, expertise on the capabilities of these systems is not widely available and there is no specific support for any other clinical data system other than RPMS at this time. For I/T/U clinics utilizing the RPMS Electronic Health Record (EHR) and for many other EHR systems, the use of clinical reminders is an effective tool for knowing when to recommend CRC screening. Forecasting logic in the RPMS system considers patient age, prior screening, prior diagnoses and family history if this information has been entered into the patient's medical record. For example, an average-risk patient who is 50 years old with no prior screening history will be forecast to receive some form of CRC screening. If the patient successfully completes an FOBT, he will be forecast for screening again in 12 months. However, if he undergoes colonoscopy and the result is negative, he will not be forecast to be screened again for 120 months (10 years).

For an office with EHR, the following roles and responsibilities should be considered: (see table on next page)

| Role | Responsibility |
|---|---|
| Maintenance of Information Technology Infrastructure: computer systems, current version of RPMS/EHR | Information Technology Site Manager |
| Display of Clinical Reminders | Clinical Applications Coordinator (CAC) |
| Training in use of EHR, including clinical reminders | CAC |
| Review of CRC Clinical Reminders at every visit | RN/LPN or MA/NA interacting with patient during clinic visit |
| Initial offer of CRC screening | RN/LPN or MA/NA interacting with patient during clinic visit |
| Follow-up of CRC Screening offered | RN or LPN case manager |
| Follow-up of refusals | Primary Care Provider |
| Discussion of positive results, referral for specialty care or further testing as needed | Primary Care Provider in collaboration with RN/ LPN case manager |
| Patient Education | Entire care team has a responsibility to educate the patient according to the patient's readiness to learn |
| Pre-test | RN/LPN or MA/NA interacting with patient during clinic visit |
| Post-test | Primary Care Provider in collaboration with RN/ LPN case manager |

Even without EHR, clinics using RPMS can readily assign and perform these same roles and responsibilities if they make use of the Health Summary at each visit. The Health Summary is a feature within RPMS that can be customized to display the latest information on a variety of clinical conditions, including recommended screenings. In the absence of a full EHR with clinical reminders, a fully optimized health summary for each patient with up to date clinical information can be quickly reviewed at the start of every clinic visit to determine the need for CRC screening.

Ideally, care teams are established that provide a mechanism for good collaboration between nurses, medical/nursing assistants and primary care providers. Patients are assigned to these teams making it clear which primary care team is responsible for routine screenings, including CRC screening. Methods can be optimized within each team to provide



appropriate education, testing, referral and follow-up. The key to effective care teams is open communication in addition to each team member understanding his or her roles and responsibilities. Data can provide opportunities to discuss completeness and adequacy of screening, identify areas where improvement is needed and motivate all team members to do their best to provide optimal preventive care.

## Overcoming Barriers

Patients will often identify barriers to screening if asked during the clinic visit. Common barriers include: misunderstanding of how to collect samples (FOBT/FIT), embarrassment regarding handling of stool samples (FOBT/FIT), discomfort related to bowel preparations (flexible sigmoidoscopy, colonoscopy, barium enema, CT colonography), fear or discomfort related to the test itself (flexible sigmoidoscopy, colonoscopy) fear of the test result (all forms of screening).

To overcome these barriers, the care team members must first develop a relationship of trust with the patient. Once rapport is established, education and materials can be provided. For some, the best form of education is through the use of models or other demonstrations. For others, brochures, drawings or other materials work best. Multimedia resources that show AI/AN people talking about their experience and the importance of screening have been used successfully in many communities. A questionnaire to help identify a patients stage of readiness to accept CRC screening is available in the tool box, 8.1.4

## Developing Screening Program Measures and Goals

Goals for CRC screening may be developed according to local needs but may also be dictated by external mandates such as GPRA or Meaningful Use. Examples of local measures that could be tracked include:

- Number of patients eligible for screening seen in one month (by any test or by a specific test)
- Percent of eligible patients screened in one month (by any test or by a specific test)
- Number/percent of refusals
- Number/percent of FOBT/FIT test kits not returned in one month

- Percent of patients referred for colonoscopy who complete the exam within 30 days

Local measures such as these can help track progress on important steps in the process of CRC screening.

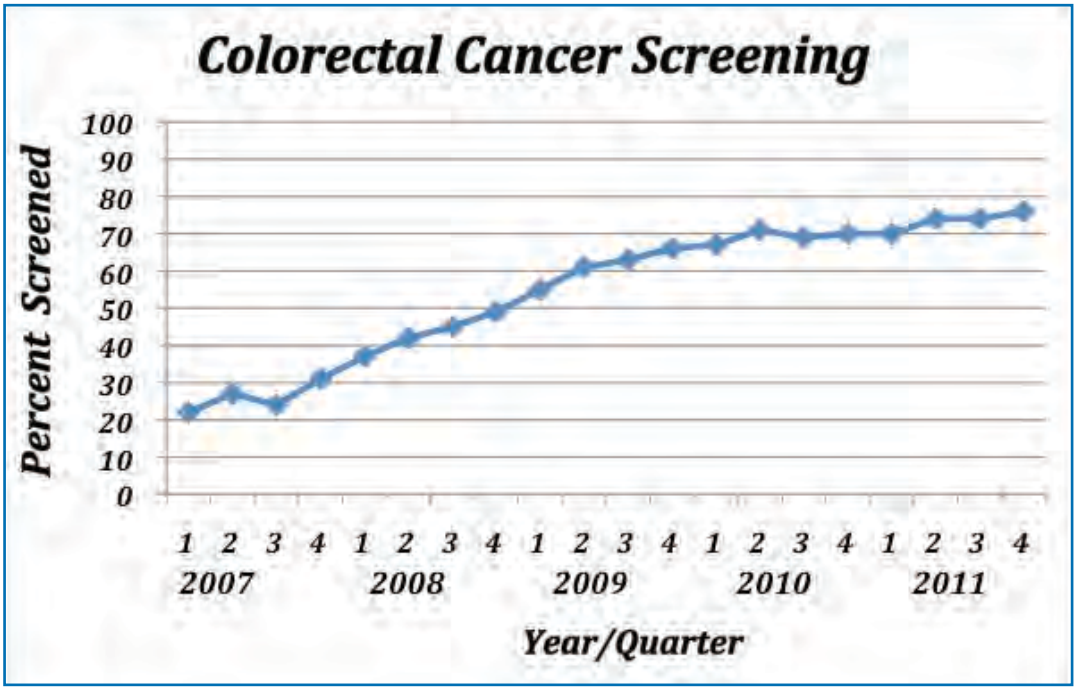
The primary external measures for CRC screening developed through GPRA are displayed in the Appendix at the end of this chapter. These measures are reported for all IHS sites and many Tribal sites and can be found aggregated by area on the IHS Quality of Care website at:

http://www.ihs.gov/qualityofcare/index.cfm

## Tools for Improvement

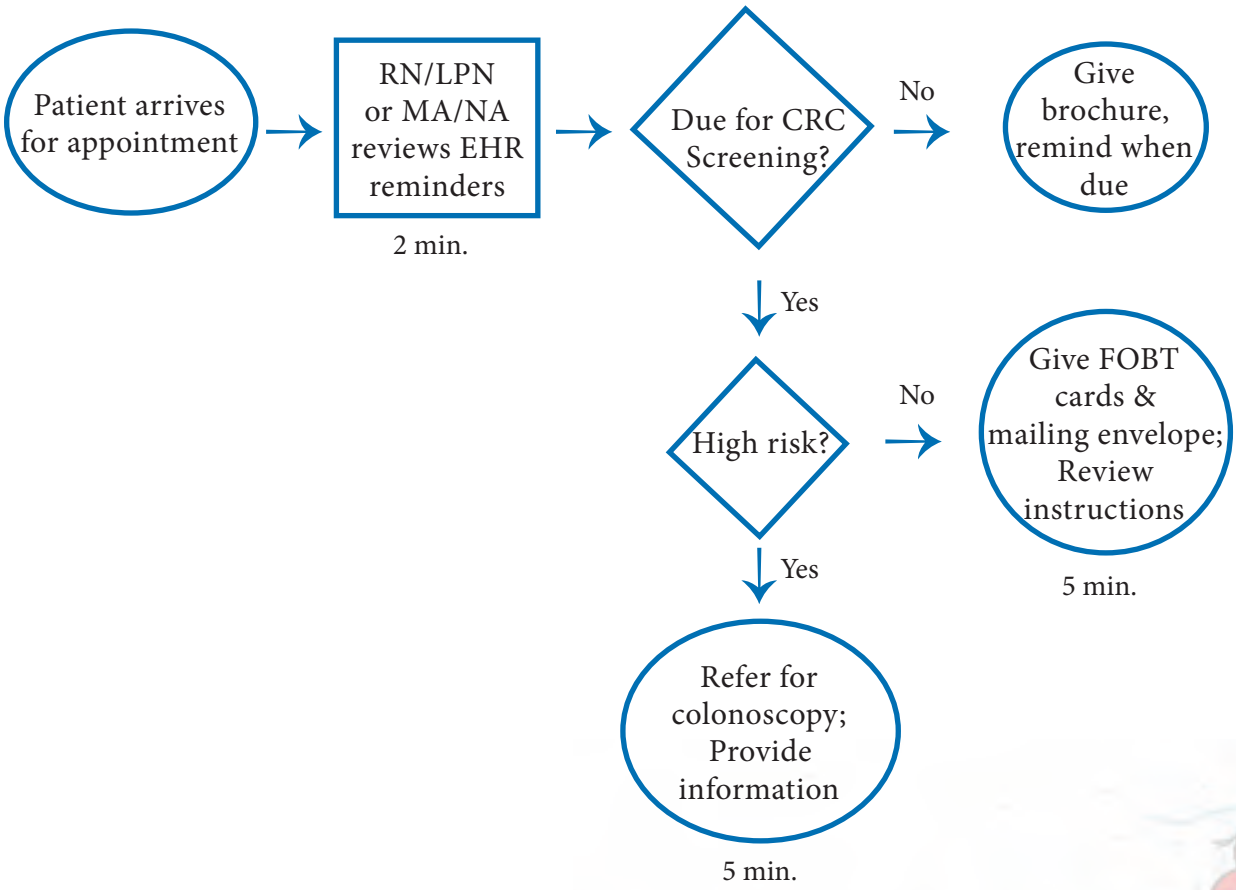
***Data:*** The RPMS application, iCare, was developed to facilitate the management of patients assigned to a care team or to manage groups of patients with the same disease conditions such as diabetes, hypertension, rheumatoid arthritis, asthma and many more. Clinics with established primary care teams have successfully used iCare to identify patients in their panels who are in need of a variety of screenings, diagnostic tests or treatment regimens. By reviewing these patient panels with iCare, those patients who have not been in the clinic recently but who are due for CRC screening can be identified. Letters or phone calls can then be used to encourage them to be screened.

Data generated from iCare or from custom RPMS queries using QMAN can be exported to programs like Microsoft Excel to create graphs showing screening rates over time by provider or care team. These graphs can be used to provide valuable information for teams to improve their performance.



***Process Mapping:*** Process mapping is a technique in which a clinical process such as patient registration, immunization services or screening is mapped out showing each individual step that must occur to complete the process. Once a process is mapped, the care team can evaluate the complexity of the process and look for opportunities to streamline. One way to start mapping a process is to walk through a typical clinic visit as a patient, either by shadowing a patient or giving a patient a form to fill in the steps and times for each step. Once the initial data is obtained, a visual map is created showing each step in the process and the amount of time taken. Tool 8.2.1 is a worksheet for process mapping.

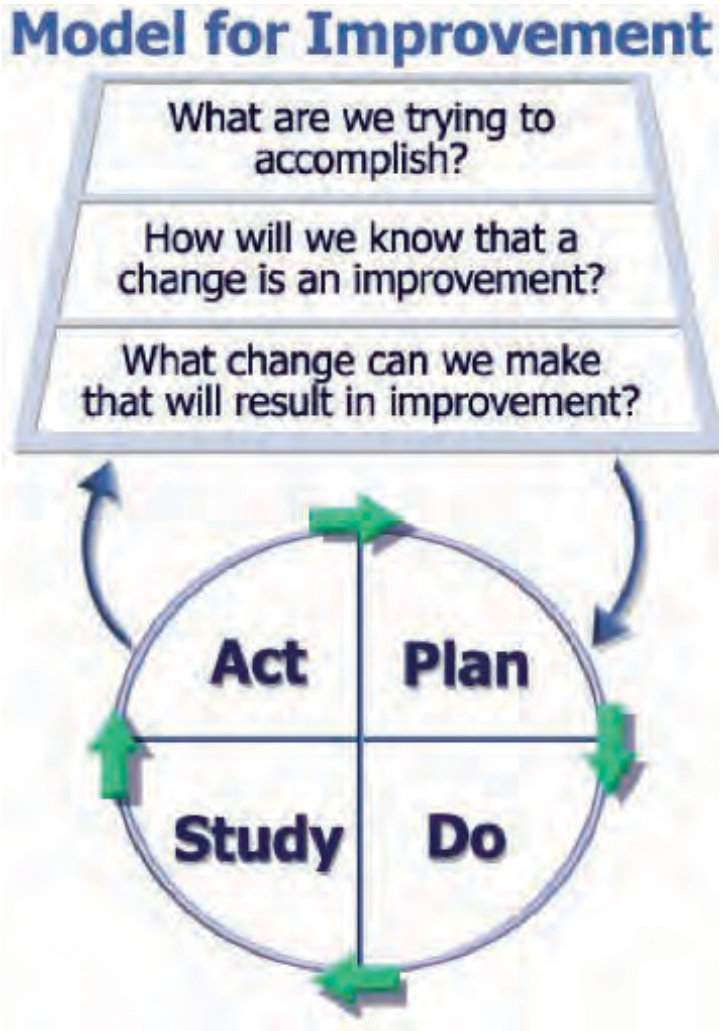
## Sample of Process Map



***Model for Improvement:*** The Model for Improvement asks three fundamental questions of any improvement effort:

1. What are we trying to accomplish?
2. How will we know that a change is an improvement?
3. What change can we make that will result in an improvement?

A key strategy in quality improvement is to make small changes, sequentially, on small numbers of patients until a process is refined and ready to be implemented. This can be done through the Plan-Do-Study-Act cycle. Tool 8.2.2 is a worksheet for planning and documenting PDSA cycles. Key points for using the Model for Improvement are to be very specific, focus on small tests with just a few patients over just 1 or 2 days. It is vitally important to include a prediction



of what will happen before performing the test cycle and to include measureable data that can be readily collected and easily analyzed[11].

## Section Summary

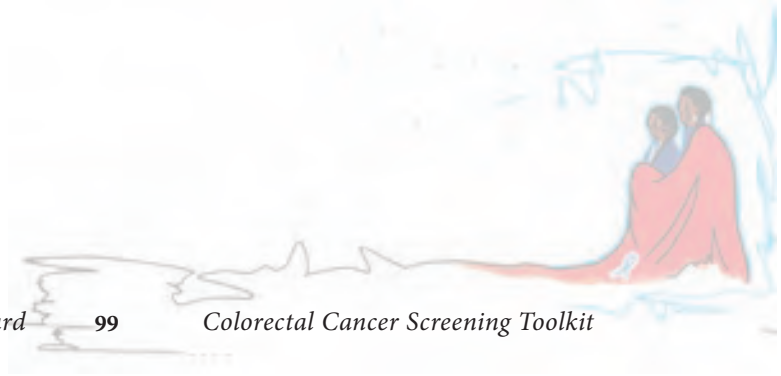
This section provides the rationale and descriptions of recommended methods for CRC Screening from a clinical perspective. To build a successful CRC screening program, it is important to identify resources to pay for screening, assign team roles and responsibilities, overcome barriers and develop measures for tracking progress. Helpful tools for developing a CRC screening program, specifically, as well as general quality improvement steps were included.

## Additional Resources

1. Colorectal Cancer Screening Algorithm. Harvard University. Available at: https://www.rmf.harvard.edu/Clinician-Resources/Guidelines-Algorithms/2010/Colorectal-Cancer-Screening-Algorithm

2. How to Increase Colorectal Cancer Screening Rates in Practice: A Primary Care Clinician's* Evidence-Based Toolbox and Guide 2008. American Cancer Society. Available at: http://www.cancer.org/healthy/informationforhealthcareprofessionals/colonmdclinicansinformationsource/cancerscreeningactionplan/index

3. National Conference of State Legislatures: Colorectal Cancer Screening: What are States Doing? Updated: August 2011. Available at: http://www.ncsl.org/default.aspx?tabid=14328



## Tool Box Description

8.1

Colorectal Cancer Screening Tools

These tools include screening checklist and algorithms that can be given to providers or posted in exam rooms

8.1.1 Colorectal Cancer Screening Checklist

8.1.2 Risk-based Colorectal Cancer Screening Algorithm

8.1.3 Algorithm for FOBT/FIT-Based Colorectal Cancer Screening

8.1.4 Brief Questionnaire Identify Decision Stage- this tool can help determine a patient's readiness to make a decision about CRC screening. Also available at

http://www.cancer.org/acs/groups/content/@editorial/documents/document/acspc-028273.pdf

8.2

Quality Improvement Tools

These tools can be used to help improve any clinical process and may be especially helpful for identifying and guiding quality improvement initiatives to improve Colorectal Cancer Screening.

8.2.1 Process Mapping Worksheet

8.2.2 Plan-Do-Study-Act (PDSA) Worksheet

8.2.3 Clinical Reporting System measures for CRC screening, Version 13. Full documentation available at:

http://www.ihs.gov/RPMS/PackageDocs/BGP/bgp_1300.01u_logicselected.pdf

# References

## Chapter 1 References:

[1] (2003). Cancer mortality among American Indians and Alaska Natives--United States, 1994-1998. Morbidity Mortality Weekly Report. 52(30), 704-707.

[2] Quality of IHS health care, performance measures: Colorectal cancer screening. Retrieved from: http://www.ihs.gov/qualityofcare/index.cfm?module=chart&rpt_type=gpra&measure=17

[3] Jamal, A., Clegg, L.X., Ward, E., Ries, L.A., Jamison, P.M., Wingo, P.A., Howe, H.L., Anderson, R.N., Edwards, B.K. (2004). Annual report to the nation on the status of cancer, 1975-2001, with a special feature regarding survival. Cancer, 101 (1). 3-27.

[4] Petersen, P. S. (2011). *Colorectal Cancer Survival Among American Indian and Alaska Native People in the Pacific Northwest: A Thesis*. Oregon Health & Science University, Portland, OR.

[5] Perdue, D.G., Perkins, C., Jackson-Thompson, J., Coughlin, S.S., Ahmed, F., Haverkamp, D.S., Jim, M.A. (2008). *Regional differences in colorectal cancer incidence, stage, and subsite among American Indians and Alaska Natives, 1999-2004. Cancer*, 113 (5 Suppl). 1179-90. doi: 10.1002/cncr.23726.

[6] Chao, A., Gilliland, F.D., Hunt, W.C., Bulterys, M., Becker, T.M., Key, C.R., (1998). *Increasing incidence of colon and rectal cancer among Hispanics and American Indians in New Mexico (United States), 1969-94*. Cancer Causes Control. 9 (2),137-44.

[7] Day, L.W., Espey, D.K., Madden, E., Segal, M., Terdiman, J.P. (2011). *Screening prevalence and incidence of colorectal cancer among American Indian/Alaskan Natives in the Indian Health Service*. Digestive Diseases and Sciences, 5 (7), 21044-2113.

[8] Northwest Portland Area Indian Health Board Diabetes Screening Toolkit Workgroup. (2003). The Diabetes Screening Toolkit. Portland, OR: Northwest Portland Area Indian Health Board.

## Chapter 2 References:


[1] Secretan, B. Straif, K., and Baan, R. (2009). A review of human carcinogens-Part E: tobacco, areca nut, alcohol, coal smoke, and salted fish. Lancet Oncology. 10(11), 1033-1034.

[2] Chan, A.T. and Giovannucci, E.L. (2010). Primary prevention of colorectal cancer. Gastroenterology. 138(6), 2029-2043.

[3] Frezza, E.E., Wachtel, M.S., Chiriva-Internati, M. (2006). *Influence of obesity on the risk of developing colon cancer. Gut: An International Journal of Gastroenterology and Hepatology* 55 (2), 285-291. doi: 10.1136/gut.2005.073163

[4] Larsson, S.C., Wolk, A. (2007). *Obesity and colon and rectal cancer risk: A meta-analysis of prospective studies*. American Journal of Clinical Nutrition 86 (3), 556-565.

[5] Larsson, S.C., Orsini, N., Wolk, A. (2005). *Diabetes mellitus and risk of colorectal cancer: A meta-analysis*. Journal of the National Cancer Institute. 97 (22), 1679-1687.

[6] Li, C., Balluz, L.S., Ford, E.S., Okoro, C.A., Tsai, J., Zhao, G. (2011) *Association between diagnosed diabetes and self-reported cancer among U.S. Adults: Findings from the 2009 behavioral risk factor surveillance system*. Diabetes Care. 34, 1365-1368.

[7] Giouleme, O., Diamantidis, M.D., Katsaros, M.G. (2011) World Journal of Gastroenterology. 14 (4), 444-448.

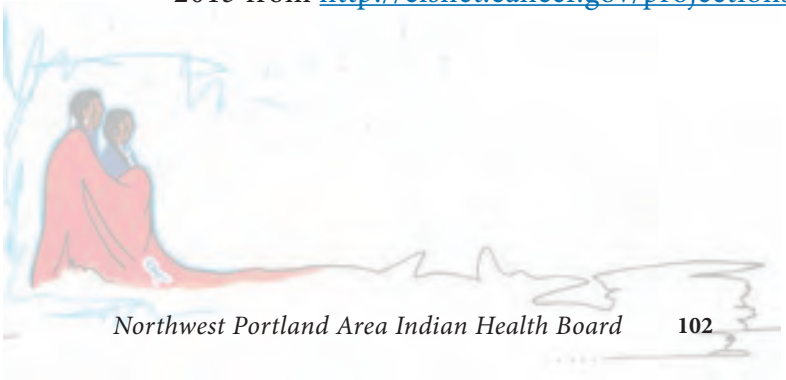
[8] Sarfaty, M. (2006). *How to increase colorectal cancer screening rates in practice: A primary care clinician's evidence-based toolbox and guide*. The National Colorectal Cancer Roundtable. i-115.

[9] Brenner, H., Tao, S. (2013). Superior diagnostic performance of faecal immunochemical tests for haemoglobin in a head-to-head comparison with guaiac based faecal occult blood test among 2235 participants of screening colonoscopy, European Journal of Cancer. From http://dx.doi.org/10.1016/j.ejca.2013.04.023

[10] Brenner, H., Tao, S. (2013). Superior diagnostic performance of faecal immunochemical tests for haemoglobin in a head-to-head comparison with guaiac based faecal occult blood test among 2235 participants of screening colonoscopy, European Journal of Cancer. From http://dx.doi.org/10.1016/j.ejca.2013.04.023

[11] National Cancer Institute (2010). Screening for Colorectal Cancer. Accessed May 31, 2013 from http://cisnet.cancer.gov/projections/colorectal/screening.php

[12] National Cancer Institute (2010). Screening for Colorectal Cancer. Accessed May 31, 2013 from http://cisnet.cancer.gov/projections/colorectal/screening.php

## Chapter 2 References:


[13] Brenner, H., Tao, S. (2013). Superior diagnostic performance of faecal immunochemical tests for haemoglobin in a head-to-head comparison with guaiac based faecal occult blood test among 2235 participants of screening colonoscopy, European Journal of Cancer. From http://dx.doi.org/10.1016/j.ejca.2013.04.023

[14] Brenner, H., Tao, S. (2013). Superior diagnostic performance of faecal immunochemical tests for haemoglobin in a head-to-head comparison with guaiac based faecal occult blood test among 2235 participants of screening colonoscopy, European Journal of Cancer. From http://dx.doi.org/10.1016/j.ejca.2013.04.023

[15] National Cancer Institute (2010). Screening for Colorectal Cancer. Accessed May 31, 2013 from http://cisnet.cancer.gov/projections/colorectal/screening.php

[16] National Cancer Institute (2010). Screening for Colorectal Cancer. Accessed May 31, 2013 from http://cisnet.cancer.gov/projections/colorectal/screening.php

[17] Indian Health Service. (2010) Strategic Plan to Increase Colorectal Cancer Screening Among American Indians and Alaska Natives Executive Summary. Accessed August 18, 2011 from http://www.ihs.gov/Epi/documents/cancer/StrategicplanIHSCRCscreeningExecSum.pdf

[18] Pignone, M., Saha, S., Hoerger, T., and Mandelblatt, J. (2002). *Cost–effectiveness analyses of colorectal cancer screening: A systematic review for the U.S. Preventive Services Task Force*. Annals of Internal Medicine. 137, 96–104.

[19] Lairson, D.R. et al. (2008). Cost-effectiveness of targeted and tailored interventions on colorectal cancer screening use. Cancer. 112, 779–88.

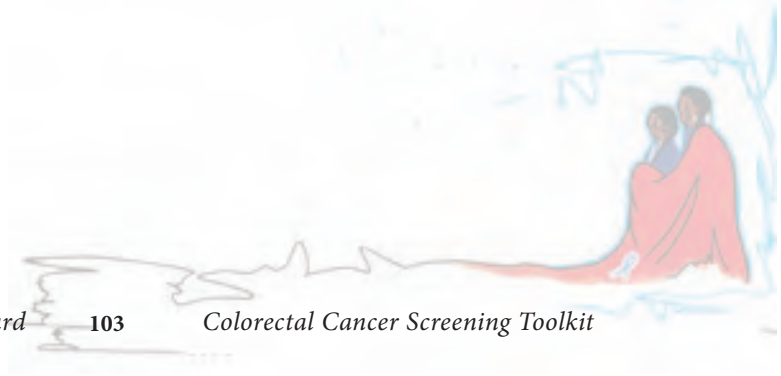
[20] Lansdorp-Vogelaar, I. et al. (2010). Cost-effectiveness of colorectal cancer screening – An overview. Best Practice & Research Clinical Gastroenterology. 24(4), 439-449.

[21] Subramanian, S. et al. 2010

[22] Lansdorp-Vogelaar, I. et al. (2010).

[23] Pignone, M., Saha, S., Hoerger, T., and Mandelblatt, J. (2002). *Cost–effectiveness analyses of colorectal cancer screening: A systematic review for the U.S. Preventive Services Task Force*. Annals of Internal Medicine. 137, 96–104.

[24] Redaelli, A., Cranor, C.W., Okano, G.J., and Reese, P.R. (2003). Screening, prevention and socioeconomic costs associated with the treatment of colorectal cancer Pharmacoeconomics. 21(17), 1213–1238.

## Chapter 2 References:

[25] American Cancer Society. (2013). Survival rates for colorectal cancer. Accessed may 31, 2013 from http://www.cancer.org/cancer/colonandrectumcancer/overviewguide/colorectal-cancer-overview-survival-rates

[26] Healthy People 2020. (2013). Data2020 search results: Adults receiving colorectal cancer screening based on most recent guidelines. Accessed may 31, 2013 from http://healthypeople.gov/2020/Data/SearchResult.aspx?topicid=5&topic=Cancer&objective=C-16&anchor=354

## Chapter 3 References:

[1] Wolin, K.Y., Yan, Y., Colditz, G.A., Lee, I.M. (2009). *Physical activity and colon cancer: A meta-analysis*. British Journal of Cancer 100 (4), 611-616. doi: 10.1038/sj.bjc.6604917

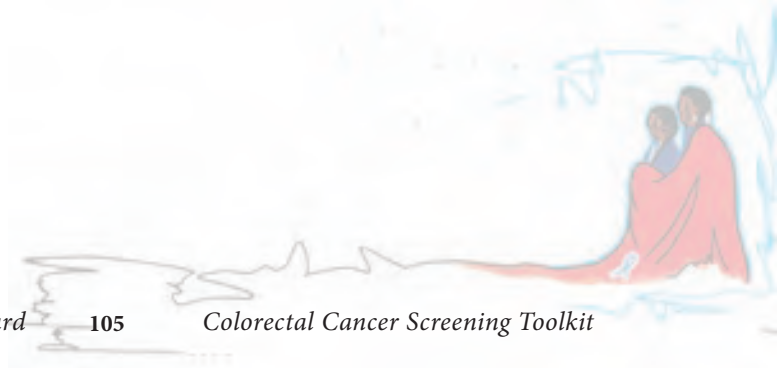
[2] Martinez, M.E., Giovannucci, E., Spiegelman, D., Hunter, D.J., Willett, W.C., Colditz, G.A. (1997). *Leisure-time physical activity, body size, and colon cancer in women. Nurses' Health Study Research Group*. Journal of the National Cancer Institute 89 (13), 948-955.

[3] Chao, A., Thun, M.J., Jacobs, E.J., Henley, S.J., Rodriquez, C., Calle, E.E. (2000). *Cigarette smoking and colorectal cancer mortality in the cancer prevention study II*. Journal of the National Cancer Institute. 92 (23), 1888-1896.

[4] Cho, E., Smith-Warner, S.A., Ritz, J., van den Brandt, P.A., Colditz, G.A., Folsom, A.R., Freudenheim, J.L., Giovannucci, E., Goldbohm, R.A., Graham, S., Holmberg, L., Kim, D.H., Malila, N., Miller, A.B., Pientinen, P., Rohan, T.E., Sellers, T.A., Speizer, F.E., Willet, F.E., Wolk, A., Hunter, D.J. (2004). *Alcohol intake and colorectal cancer: A pooled analysis of 8 cohort studies*. Annals of Internal Medicine. 140 (8), 603-613.

[5] Rothwell, P.M., Wilson, M., Elwin, C.E., Norrving, B., Algra, A., Warlow, C.P., Meade, T.W. (2010). *Long-term effect of aspirin on colorectal cancer incidence and mortality: 20-year follow-up of five randomised trials*. The Lancet, 376 (9754), 20-26.





## Chapter 4 References:

[1] Adapted from: Plested, B.A., Edwards, R.W., Jumper-Thurman, P. (2005). *Community readiness: Advancing HIV/AIDS prevention in Native communities*. From www.triethniccenter.colostate.edu

## Chapter 6 References:

[1] Wakefield, M.A., Loken, B., Hornik, R.C. (2010). *Use of mass media campaigns to change health behavior*. The Lancet. 376, 1291-71.

[2] Oregon Health Authority and the Northwest Portland Area Indian Health Board. (2012). *Native American media guide, colorectal cancer: The cancer you can prevent*.

[4] Mitchell, P.S. (2011). *"What's the big deal?"*

[5] Gucciardi, E., Cameron, J.I., Liao, C.D., Palmer, A., Stewart, D.E., (2007). *Program design features that can improve participation in health education interventions*. Biomedical Research Methodology, 7 (47), 1-8.

[6] Alliance for Cervical Cancer Prevention. (2003). Fact Sheets. ACCP. Retrieved from: http://www.rho.org/ccresources.htm

[7] Alliance for Cervical Cancer Prevention. (2003). Fact Sheets. ACCP. Retrieved from: http://www.rho.org/ccresources.htm

[8] Tomlin, K., Walker, R.D., Grover, J., Arquette, W., Stewart, P., *Motivational Interviewing: Enhancing motivation for change- A learner's manual for the American Indian/Alaska Native Counselor*. One Sky National American Indian Alaska Native Resource Center for Substance Abuse Services. Retrieved from: http://www.motivationalinterview.org/Documents/LearnersManualforMotivationalInterviewing.pdf

[9] Miller, W. R. & Rollnick, S. (2002). *Motivational Interviewing: Preparing people for change*, 2nd Ed. New York: Guilford Press.

## Chapter 8 References:


[1] Cost-effectiveness of Colorectal Cancer Screening. I Lansdorp-Vogelaar, Knudsen A, Brenner, H. Epidemiologic Reviews; Vol. 33:88--100, 2011

[2] Meta-analysis: adherence to colorectal cancer screening and the detection rate for advanced neoplasia, according to the type of screening test. C. Hassan, Giorgi Rossi, P, Camilloni, L, Rex, D, Jimenez-Cendales, B, Ferroni, E, Borgia, P, Zullo, A, Guasticchi, G, and the HTA Group. Aliment Pharmacol Ther 2012;36(10):929-940.

[3] Evidence Review and Status Update on Computed Tomography Colonography. D Boone, Halligan S, & Taylor, S. Current Gastroenterology Reports 2011;13(5):486—494.

[4] Screening and Surveillance for the Early Detection of Colorectal Cancer and Adenomatous Polyps, 2008: A Joint Guideline from the American Cancer Society, the US Multi-Society Task Force on Colorectal Cancer, and the American College of Radiology Levin B, Lieberman D, McFarland B, et al. CA Cancer J Clin, May 2008; 58: 130 - 160

[5] Screening for Colorectal Cancer: U.S. Preventive Services Task Force Recommendation Statement U.S. Preventive Services Task Force; Annals of Internal Medicine 2008 149: 627-637

[6] Sarfaty, M. How to Increase Colorectal Cancer Screening Rates in Practice: A Primary Care Providers Evidence-Based Toolkit and Guide, 2008 National Colorectal Cancer Roundtable

[7] Colorectal cancer screening -- state and federal coverage laws. American Cancer Society. http://www.cancer.org/Cancer/ColonandRectumCancer/MoreInformation/ColonandRectumCancerEarlyDetection/colorectal-cancer-early-detection-screening-coverage-laws

[8] Alternative Benefits: State Plan Ammendment Basic Benchmark Plan for Low-Income Children and Working Age-Adults. Idaho. http://www.healthandwelfare.idaho.gov/LinkClick.aspx?fileticket=aE6mM-pIVQg%3d&tabid=123&mid=1160

[9] National Conference of State Legislatures. Colorectal Cancer Screening: What are States Doing? http://www.ncsl.org/default.aspx?tabid=14328

[10] Colon Cancer Screening for the Uninsured. http://coloncancer.about.com/od/screening/a/Uninsured.htm

[11] Langley GL, Nolan KM, Nolan TW, Norman CL, Provost LP. The Improvement Guide: A Practical Approach to Enhancing Organizational Performance (2nd edition). San Francisco: Jossey-Bass Publishers; 2009.

Northwest Tribal
Colorectal Cancer Screening
Toolkit

is a publication of
the Northwest Portland Area Indian Health Board
2121 SW Broadway, Suite 300
Portland, OR 97201
(503) 228-4185
(503) 228-8182 FAX
www.npaihb.org