New Brunswick Colon Cancer Screening
Clinical Practice Guidelines

New Brunswick Cancer Network

Department of Health
August 2013
The New Brunswick Cancer Network (NBCN) recognizes the importance of prevention and screening in reducing the burden of cancer for New Brunswickers. Historically, colon cancer screening in the province has been done in an opportunistic fashion, driven primarily by the relationship between patients and their primary care providers. Subsequent to the announcement in 2009 to establish a provincial Colon Cancer Screening Program (CCSP) for New Brunswick, NBCN has been working with a multi stakeholder Steering Committee to plan and develop the program.

Through the work of the Steering Committee and the Clinical Practice Guideline Sub-Committee, we are pleased to provide the New Brunswick Colon Cancer Screening Clinical Practice Guidelines, our first step to implementing a Provincial Colon Cancer Screening Program. These Guidelines are intended to assist health care providers and New Brunswickers in optimizing colon cancer screening in New Brunswick. The full implementation of the Colon Cancer Screening Program is anticipated in 2014-2015. This Clinical Practice Guideline (CPG) document has been developed using evidence-based recommendations and should be used as an adjunct to sound clinical decision making.

We extend our thanks to the Steering Committee's Clinical Practice Guidelines Sub-committee members for their work in reviewing the literature and coming to consensus on these guidelines. We would welcome any comments or recommendations you may have for improvement of this document. An evaluation form is available on the NBCN website for feedback.

We look forward to these new guidelines becoming the mainstay of practice in New Brunswick.

Sincerely,

Dr. S. Eshwar Kumar
Co-CEO, New Brunswick Cancer Network

Dr. Réjean Savoie
Co-CEO, New Brunswick Cancer Network
# Table of Contents

**Introduction** .................................................................................................................................1  
A. Natural History of Disease and Risk Factors ..............................................................................3  
B. Prevention and Screening ............................................................................................................4  
C. The development of the NB Colon Cancer Screening Program (NBCCSP) ..............................5  

**The NB Colon Cancer Screening Program (NBCCSP)** ..................................................................7  
The NB CS-IIS database ....................................................................................................................7  

**New Brunswick Colon Cancer Screening Clinical Practice Guidelines** .........................................8  
Methodology .....................................................................................................................................8  
Guidelines Recommendations .........................................................................................................9  

**References** .....................................................................................................................................12  

**Appendix 1: NB Colon Cancer Screening Clinical Practice Guidelines algorithm** .................13  
**Appendix 2: Glossary of abbreviations** ......................................................................................14  
**Appendix 3: Acknowledgements** ..............................................................................................15
Introduction

In Canada in 2013, it is estimated that 23,800 people will develop colorectal cancer (CRC) and 9,200 will die of the disease, making this cancer the second most common cause of cancer death amongst Canadians.\textsuperscript{1} About 95\% of new cases and deaths (Figure 1) occur after the age of 50.\textsuperscript{2}

**Figure 1:**
Age-Specific Incidence Rates (2003-2007) and Mortality Rates (2003-2006) for Colorectal Cancer, by Sex, Canada

Note: The number of cases from death certificates only for Quebec in 2007 are estimated.
Analysis by: Chronic Disease Surveillance and Monitoring Division, CCDPC, Public Agency of Canada
Data sources: Canadian Cancer Registry and Canadian Vital Statistics Death databases at Statistics Canada

**Canadian Cancer Statistics 2011**

In NB in 2013, it is estimated that there will be 600 new cases of colorectal cancer and 210 will die of the disease.\textsuperscript{1} In NB, it is the 3\textsuperscript{rd} most common cancer diagnosed in both genders and the 2\textsuperscript{nd} most common cause of cancer deaths in males, 3\textsuperscript{rd} in females.\textsuperscript{1}

**Figure 2:**
Age-Specific Incidence and Mortality Rates by Sex for Colorectal Cancer, New Brunswick, 2006-2010

Data source: New Brunswick Provincial Cancer Registry and Vital Statistics New Brunswick Canada
Comparable to the Canadian statistics, 95% of new cases and deaths occur after the age of 50 which reinforces the rationale to start screening at that age.

Since 1989, the incidence and mortality rates for colorectal cancer in both sexes have decreased in NB. The 5-year survival rate is 59.7% for males and 63.7% for females.³

This means that nearly 40% of New Brunswickers diagnosed with colorectal cancer will die within 5 years of diagnosis. The numbers of new cases and deaths from colorectal cancer are predicted to increase in NB.³

In NB, opportunistic colorectal cancer screening for average risk individuals includes guaiac Fecal Occult Blood Test (gFOBT), colonoscopy and flexible sigmoidoscopy. With these three modalities combined, NB colorectal screening rates of about 34% ranked 3rd lowest in the country as reported by the Canadian Partnership Against Cancer (Figure 3).⁴

**Figure 3:**

Percentage of Canadians (aged 50 to 74) at average risk for CRC reporting fecal test in the past two years and/or sigmoidoscopy/colonoscopy in the past five years, by province/territory - 2009 and 2011

Individual decisions to participate in an organized colorectal cancer screening program will vary according to:

- one’s fear of cancer,
- the potential harm associated with the diagnostic test and,
- the perceived health benefits of finding pre-cancerous cells or early stage colorectal cancer.⁵

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Note: Average risk includes those aged 50 to 74 and not diagnosed with Crohn’s disease, colitis, polyps or FAP, and have no immediate biological family member with CRC.

Data source: 2009 and 2011 Colon Cancer Screening in Canada surveys.
Recommendation of cancer screening by a Primary Care Provider (PCP) has been shown to lead to increased participation. The strongest determinant of getting screened for colorectal cancer is a discussion between individuals and their physicians.

Figure 4 shows that NB physicians are the least likely to initiate a conversation about colorectal cancer screening with their patients aged 50-74.

### Figure 4:
Percentage of Canadians (aged 50 to 74) who reported that their physician initiated a conversation about CRC screening, by province/territory - 2011

As 75% of people diagnosed with colorectal cancer are asymptomatic average risk individuals over the age of 50, it is important to raise awareness of the benefits and risks associated with the decision to be screened or not to be screened in this age group.

### A. Natural History of Disease and Risk Factors

Most colorectal cancers begin as benign polyps and can take up to ten years or more to become malignant. In general, colorectal cancer has a long pre-symptomatic stage. Symptoms may not appear until a later stage of the cancer and vary depending on the location, type and extent of the tumor. Symptoms include:

- Rectal bleeding or blood in the stool
- Changes in bowel habits such as diarrhea, constipation, or stools that are narrower than usual
- Persistent bloating, feelings of fullness, cramps and steady pain in the abdominal region
- Weakness and fatigue
- Anorexia, vomiting and weight loss.

The single most important prognostic indicator is the stage at which CRC is diagnosed. When the disease is diagnosed at an early stage, the 5-year survival ratio is over 90%.5
Factors modifying the risk of colorectal cancer (CRC)\(^{2,5,6}\)

- Age over 50 (70-80%)
- Personal history of CRC
- Polyps
- Family history of CRC in a first-degree relative (parent, sibling, child) [10-15%]
- Genetic conditions like Familial Adenomatous Polyposis (FAP), Hereditary Non Polyposis Colorectal Cancer also known as HNPCC or Lynch syndrome (5%)
- Inflammatory bowel disease (Ulcerative colitis or Crohn’s disease)
- Ethnic background – people of Ashkenazi descent
- Diet high in red meat, high in fat and high in processed meat\(^*\)
- Alcohol, Obesity, Physical inactivity, Smoking\(^*\)

Age, personal medical history and family history are the most relevant factors affecting a person’s risk of developing colorectal cancer. A person’s risk determines when screening should be initiated as well as what tests are appropriate for them.

An **average risk** individual is someone ≥ 50 years of age with: no symptoms and no personal history of colorectal adenomatous polyps, colorectal cancer (CRC) or inflammatory bowel disease and no first degree family history of CRC. Individuals with affected relatives who are more distant than first degree, can be considered to be at average risk.\(^5\)

A **not average risk (increased risk)** individual is someone with: one or more first degree relative with CRC, a personal history of colorectal adenomatous polyps or CRC, a strong family history of CRC with multiple individuals affected but no genetic syndrome identified, a family history of HNPCC or FAP or a personal history of inflammatory bowel disease.\(^5\)

B. Prevention and Screening

Based on current knowledge, colorectal cancer (CRC) risks may be reduced by eating a healthy diet, being physically active, maintaining a healthy weight, avoiding smoking and minimizing alcohol consumption.\(^2\)

The aim of colon cancer screening is to lower the burden of cancer in a population by preventing disease or detecting cancer at an early stage for people with no symptoms of the disease. **Individuals with symptoms or signs suggestive of the presence of CRC require a diagnostic workup.**

1. **Screening Tools available**

   a. **Fecal Occult Blood Test (FOBT)**

   Scientific evidence shows that deaths from colorectal cancer (CRC) were reduced by 14-18% with biennial screening and 33% with annual screening with a guaiac fecal occult blood test (gFOBT). It has also been demonstrated to reduce the incidence of CRC by about 20% over 18 years of follow-up in the US trial.\(^5\)

   The gFOBT picks up pseudo-peroxidase activity of hemoglobin in stools. A different technology has been used to develop the Fecal Immunochemical Test (FIT) which is specific to human globin and is referred to as an iFOBT.

   A recent systematic review concluded that FIT was more sensitive than and as specific for CRC detection as gFOBT. Other advantages include: less number of stool specimens required, better method of specimen collection and no dietary restrictions prior to specimen collection, making it more acceptable as a screening tool for the target population. Automated analysis and the provision of a quantitative score appear more advantageous for the screening programs.\(^7\)

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* Certain risks factors can be modified to reduce the risk of developing CRC.

*New Brunswick Colon Cancer Screening Clinical Practice Guidelines*
The Canadian Association of Gastroenterology (CAG) recommends that FIT or high sensitivity gFOBTs should be used for screening average-risk individuals, FIT being the preferred method. FOBT screening for colon cancer should be performed annually or biennially depending on the resources available in a particular jurisdiction.8

b. Flexible Sigmoidoscopy (FS)

A flexible fiberoptic instrument is used to examine the rectum and lower (distal) colon. “European and American trials provided clear evidence that FS reduces incidence and mortality from CRC in average risk individuals. Based on those results, the Canadian Partnership Against Cancer (CPAC) recommends that FS be considered as an option in organized CRC screening programs in Canada. CPAC identifies that adding FS as an option for CRC screening requires close monitoring and evaluation of the use of the test, best accomplished through phased implementation pilots with well-designed evaluation plans.”7

The Canadian Association of Gastroenterology (CAG) recommends that provincial screening programs should consider adding FS to the colon cancer programmatic screening, recognizing that this approach requires expansion of endoscopy capacity, a change in funding/reimbursement model for FS and the introduction training for non physician endoscopists for FS.

CAG clarifies that abnormal screens from a Flexible Sigmoidoscopy require a colonoscopy to examine the entire colon for proximal adenomas or cancer. Studies suggest that using FS only as a screening strategy would fail to detect 21%-65% of right sided, advanced neoplasias.8

c. Colonoscopy (CS)

Colonoscopy allows direct visual examination of the entire colon and rectum with a long flexible fiberoptic tube. The sensitivity for large adenomas and colorectal cancer (CRC) exceeds 90%. It requires full bowel preparation and sedation. There is a small risk of perforation of the colon (1/1000 procedures) and use of sedation may cause cardiopulmonary complications. It is the investigation of choice for screening of high risk individuals. Reduction in CRC mortality in FOBT trials is attributable to follow-up diagnostic colonoscopy.5

Colonoscopy is not recommended for population-based colon cancer screening as a first-line screening tool.8

d. Barium Enema

Air-contrast barium enema should no longer have a role in population screening for colon cancer.9

e. Computed Tomography Colonography (CTC)

CTC is not recommended for population screening for colon cancer.8

f. Fecal DNA testing

Fecal DNA testing is currently not recommended for population screening for colon cancer.8

C. The development of the NB Colon Cancer Screening Program (NBCCSP)

Since its inception the New Brunswick Cancer Network (NBCN) has been planning an integrated strategy for cancer screening programs.

In January 2009, the Minister of Health announced a colon cancer screening strategy. The NBCCSP is a responsibility of the New Brunswick Cancer Network (NBCN) at the Department of Health.

The structure of the program development is illustrated on the following page:
The implementation of the population based organized NB Colon Cancer Screening Program will be done over a 3 year period and will be led by a multidisciplinary Steering Committee. The stakeholders are represented by:

- Various sections of the NB Medical Society including: Oncology, Pathology, General Surgery, Family Medicine, Gastroenterology and Biochemistry.
- Laboratory Administrative Directors
- Information Technology Specialists
- New Brunswick Division of the Canadian Cancer Society
- New Brunswick Cancer Network Coordinators

For colorectal cancer (CRC), there is strong evidence that screening using an FOBT reduces mortality. A positive test should be followed by a colonoscopy where removal of pre-malignant lesions, if found, reduces the incidence of colon cancer by stopping the progression to cancer.²

Screening for CRC with FOBT meets the following requirements of an organized screening program:⁷

1. The disease is an important public health problem;
2. There is an effective treatment for localized disease;
3. Facilities for further diagnosis and treatment are available;
4. There is an identifiable latent or early symptomatic stage of disease;
5. The technique to be used for screening is effective;
6. The tests are acceptable to the population;
7. The natural history of the disease is known;
8. There is a strategy for determining which patients should and should not be treated;
9. The cost of screening is acceptable;
10. Effective treatment is available and management of cases in the early stages has a favourable impact on prognosis.
The NB Colon Cancer Screening Program (NBCCSP)

The NBCCSP's Goals are to:

1. Reduce the incidence of and mortality from colorectal cancer;
2. Establish protocols and guidelines;
3. Increase the participation in CRC screening using FIT as the first-line screening tool;
4. Organize and standardize processes following first-line screening.

The NBCCSP will be evidence-based and have six key components:

- Recruitment and retention strategies;
- Screening and clinical services for average risk individuals;
- Information management;
- Quality assurance;
- Monitoring and Evaluation and;
- Public and Health Care Professionals continuing education.

The NBCCSP is targeting New Brunswickers aged 50-74 at average risk of developing colorectal cancer (CRC). Biennial Fecal Immunochemical Test (FIT) is recommended as the first-line screening tool and colonoscopy as the second-line screening and follow-up procedure for those who have positive FIT results.

Program Flow:

- Average risk individuals age 50 to 74 will be invited by letter to participate;
- Fecal Immunochemical Test (FIT) will be mailed to the eligible participants;
- Participants will mail their specimen to the provincial laboratory processing FIT in Campbellton;
  - If FIT normal → re-invite in 2 years
  - If FIT abnormal → Colonoscopy coordinated by the Program Nurse
- Pre-colonoscopy assessment by the Program Nurse will determine if the participant can proceed to colonoscopy or to consultation with an Endoscopist.
  - If Colonoscopy normal → re-invite in 10 years (FIT)

The participants can opt out of the Program at anytime of their choosing. The Primary Care Provider will be notified if their patient opts out.

* Program Flow:

- All individuals who are not average risk will not be followed by the NBCCSP. The responsibility of the follow-up and management will be that of the Primary Care Provider and or consulted specialist.

The NB CS-IIS database

The NBCCSP will be supported by the NBCN Cancer Screening Integrated Information System (CS-IIS). The CS-IIS will interface with other provincial databases for demographic information and with the Electronic Health Record. The CS-IIS will enable ongoing monitoring and evaluation of the Program's performance.

* See details in Clinical Practice Guidelines Algorithm
Methodology

The membership of the NBCCS Clinical Practice Guidelines Sub-Committee was appointed by the Steering Committee (Appendix 3).

Members of the Sub-Committee reviewed a number of colorectal cancer screening guidelines currently used by practitioners across Canada and supported by relevant Canadian Professional Associations. The Sub-Committee adapted and adopted existing guidelines while remaining aware of issues specific to New Brunswick.

The Sub-Committee agreed to follow the CAN-Implement process as a resource for systematic adaptation of existing guidelines. The major source used was the SAGE Directory of Cancer Guidelines and Standards.

At the time of the review, this Directory was focused on guidelines in English for the most common cancer disease sites, including colon cancer, published from 2001 to 2011. Based on the specific needs of the NBCCSP and the current New Brunswick health-care context, the Sub-Committee proceeded with a full assessment of the following documents.

- Cancer Care Ontario Colorectal Cancer Screening Clinical Practice Guidelines (2008)
- Alberta: Clinical Practice Guideline: Screening for Colorectal Cancer (2008)
- Canadian Association of Gastroenterologists position statement on screening individuals at average risk for developing colorectal cancer (2010)
- Quebec Call for Applications Guidance Document: Demonstration sites for Colonoscopy Services and Quebec Colorectal Cancer Screening Program (2010)

The following are the highlights of this process:

A) A list of health questions relevant to colorectal cancer (CRC) screening was developed which included:

- Target population - most appropriate time for initiation of screening;
- Target population - most appropriate time for cessation of screening;
- Optimal screening intervals;
- Optimal screening tools for first-line screening and follow-up procedure for those who have positive results (second-line screening);
- Optimal screening circumstances;
- Population Average Risk definition;
- Population Not Average Risk definition;
- Management of Colonoscopy results following a positive FIT (normal, abnormal, and incomplete);
- Recommendation for individuals unable to undergo colonoscopy.

B) Review of the Guidelines:

The members of the Sub-Committee were asked to review the aforementioned documents.

The Sub-Committee met and reached consensus on acceptability and applicability of the guidelines recommendations as they relate to the New Brunswick context.

The Draft guidelines were circulated for external review and feedback. The external reviewers included all Oncologists, all heads of General Surgery, all heads of Family Medicine, all Gastroenterologists in New Brunswick.
Suggestions and comments were reviewed by the Sub-Committee and the final version of the New Brunswick Colon Cancer Screening Clinical Practice Guidelines received approval by the NBCCSP Steering Committee in July 2013.

The Clinical Practice Guidelines will be reviewed every two years or earlier if new evidence becomes available. The chair of the Clinical Practice Guidelines Sub-Committee will be responsible for initiating the review.

**Guidelines Recommendations**

The NB Colon Cancer Screening Program Steering Committee adopted the following Guidelines:

Legend: green – program responsibility; red – outside of program responsibility

### Optimal Screening Circumstances

Given the lower incidence and mortality rates associated with organized screening programs elsewhere, participation in a provincial colon cancer screening program is recommended to manage *Average Risk* individuals aged 50 to 74

### Target Population and Screening Interval

<table>
<thead>
<tr>
<th>Target Population</th>
<th>Target population to be invited</th>
<th>NB residents, male and female, age 50-74</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiation of Screening</td>
<td>Target population-most appropriate time for initiation of colon cancer screening</td>
<td>Colon cancer screening for <em>Average Risk</em> individuals should begin at age 50</td>
</tr>
<tr>
<td>Screening Interval</td>
<td>Colon Cancer Screening Interval</td>
<td>Screening should be done biannually with FIT as long as the result is negative</td>
</tr>
<tr>
<td>Cessation of Screening</td>
<td>Target population-most appropriate time for cessation of colon screening</td>
<td>Screening should end after the age of 74</td>
</tr>
</tbody>
</table>

### Optimal Colon Cancer Screening Tools

First-line screening test for *Average Risk* individuals is the Fecal Immunochemical Test (FIT)

Second-line screening for *Average Risk* individuals who have had a positive FIT result is a colonoscopy

<table>
<thead>
<tr>
<th>Risk Level</th>
<th>Description</th>
<th>Recommended management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Risk</td>
<td>Asymptomatic (e.g. no narrowed stools or rectal bleeding) with no personal history of: colorectal adenomatous polyps, colorectal cancer or history of inflammatory bowel disease or 1st degree family history of colorectal cancer with one 2nd or 3rd degree relative affected with colorectal cancer</td>
<td>Invited by the program to do a FIT every two years</td>
</tr>
</tbody>
</table>
### FIT Results and management for average risk individuals

<table>
<thead>
<tr>
<th>FIT Result</th>
<th>Recommended management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal or negative</td>
<td>Re-invited in 2 years</td>
</tr>
<tr>
<td>Test not processed</td>
<td>Program notified and new FIT kit sent</td>
</tr>
<tr>
<td>Abnormal or Positive</td>
<td>Pre-colonoscopy assessment done by program nurse</td>
</tr>
</tbody>
</table>

### Colonoscopy results and management for average risk individuals continuing in the program

<table>
<thead>
<tr>
<th>Colonoscopy Result</th>
<th>Recommended management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal or negative</td>
<td>Returns to <a href="#">Average Risk</a> category and FIT in 10 years</td>
</tr>
<tr>
<td>Small hyperplastic polyp &lt; 1 cm</td>
<td>Returns to <a href="#">Average Risk</a> category and FIT in 10 years</td>
</tr>
<tr>
<td>Incomplete colonoscopy</td>
<td>Second colonoscopy within 60 days or other diagnostic investigation</td>
</tr>
<tr>
<td>Unable to undergo Colonoscopy</td>
<td>Other diagnostic investigation based on clinical judgement</td>
</tr>
</tbody>
</table>
### Management of abnormal or positive Colonoscopy results following positive FIT for all individuals

<table>
<thead>
<tr>
<th>Colonoscopy Result</th>
<th>Recommended management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any adenomas</td>
<td>Out of Program and surveillance by Endoscopist</td>
</tr>
<tr>
<td>Numerous polyps</td>
<td>Colonoscopy after a short interval based on clinical judgement, consider looking for hereditary syndrome</td>
</tr>
<tr>
<td>Large sessile serrated adenoma &gt; 1cm</td>
<td>Colonoscopy in 3 years(^\text{11})</td>
</tr>
<tr>
<td>Cancer of the colon or rectum</td>
<td>Refer for definitive management</td>
</tr>
</tbody>
</table>

### Recommended Management by Primary Care Provider or Specialist

<table>
<thead>
<tr>
<th>Risk Level</th>
<th>Description</th>
<th>Recommended Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Average Risk</td>
<td>One 1(^{\text{st}}) degree relative with CRC or adenomatous polyps diagnosed older than 60 years of age; or two or more 2(^{\text{nd}}) degree relatives with polyps or CRC</td>
<td>First-line screening with FOBT every 2 years beginning at age 40 and/or referral to specialist</td>
</tr>
<tr>
<td></td>
<td>One 1(^{\text{st}}) degree relative with CRC or adenomatous polyps diagnosed younger than 60 years of age; or two or more 1(^{\text{st}}) degree relatives with polyps or CRC at any age</td>
<td>Colonoscopy every 5 years beginning at age 40 or ten years earlier than the youngest diagnosis of relative(s) with colon cancer</td>
</tr>
<tr>
<td></td>
<td>Familial Adenomatous Polyposis (FAP)</td>
<td>Flexible sigmoidoscopy annually beginning at age 10 to 12 years old</td>
</tr>
<tr>
<td></td>
<td>Attenuated Familial Adenomatous Polyposis</td>
<td>Colonoscopy annually beginning at age 16 to 18 years old</td>
</tr>
<tr>
<td></td>
<td>Inflammatory Bowel Disease</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ulcerative Colitis or Crohn's Disease</td>
<td>Colonoscopy 8 to 10 years after disease onset</td>
</tr>
<tr>
<td></td>
<td>Pancolitis</td>
<td>1(^{\text{st}}) decade colonoscopy 8 years after onset</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2(^{\text{nd}}) decade colonoscopy every 3 years</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3(^{\text{rd}}) decade colonoscopy every 2 years</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4(^{\text{th}}) decade colonoscopy yearly</td>
</tr>
<tr>
<td></td>
<td>Left sided colitis</td>
<td>Colonoscopy 15 years after onset</td>
</tr>
<tr>
<td></td>
<td>Hereditary Nonpolyposis Colorectal Cancer (HNPCC) or Lynch Syndrome</td>
<td>Colonoscopy every 1 to 2 years beginning at age 20, or 10 years earlier than the youngest diagnosis in the family, whichever comes first</td>
</tr>
<tr>
<td></td>
<td>Identified Genetic Mutation</td>
<td>Refer to appropriate specialist</td>
</tr>
</tbody>
</table>

### Qualifying Statements

This Clinical Practice Guideline (CPG) document has been developed using evidence-based recommendations and should be used as an adjunct to sound clinical decision making.
References


6. Clinical Practice Guideline: Colorectal Cancer Screening; ColonCancerCheck, Cancer Care; Ontario, 2008.


Appendix 1: NB Colon Cancer Screening Clinical Practice Guidelines algorithm

New Brunswick Colon Cancer Screening Clinical Practice Guidelines

Target Population: Age 50 – 74

**Average Risk** = Asymptomatic with no personal history of:
- a) Colorectal adenomatous polyps
- b) Colorectal Cancer (CRC)
- c) 1st degree family history of CRC
- d) Inflammatory bowel disease

**Average Risk** = with one 2nd or 3rd degree relative affected with CRC

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**1st line screening**

**Fecal Immunochemical Test (FIT)**

**FIT normal/negative**
- Re-invited in 2 years

**FIT not processed**
- Program notified and new FIT sent

**FIT abnormal/positive**
- Pre-colonoscopy assessment

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**2nd line screening**

**Colonoscopy (CS)**

**Normal/Negative**

- **Average Risk**
  - FIT in 10 years

**Small hyperplastic polyps**

- **Average Risk**
  - FIT in 10 years

**Unable to undergo CS**

- Other diagnostic investigation based on clinical judgment

**Incomplete CS**

- **2nd CS within 60 days or other diagnostic investigation**

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**Abnormal/Positive**

- **Any adenomas out of Program and surveillance by Endoscopist**

- **Numerous polyps**
  - CS after short interval based on clinical judgment, consider looking for hereditary syndrome

- **Large sessile serrated adenoma (>1 cm)**
  - CS in 3 years

- **Ca of colon or rectum**
  - Referred for definitive management

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**Not Average Risk**

- **One 1st degree relative >60 years with CRC or adenomatous polyps or two or more 2nd degree relatives with polyps or CRC**

  - **1st Line screening** [FOBT q 2 years] beginning at age 40 and/or refer to specialist

- **One 1st degree relative <60 years with CRC or adenomatous polyps or two or more 1st degree relatives at any age with polyp or CRC**

  - CS q 5 years. Begin at age 40 or 10 years earlier than youngest relative diagnosed with CRC

- **Familial Adenomatous Polyposis (FAP)**

  - Flexible sigmoidoscopy annually beginning at age 10 – 12

- **Attenuated FAP**

  - CS annually beginning at age 16 – 18

- **Inflammatory Bowel Disease**

  - Ulcerative Colitis or Crohn’s Disease
    - CS 8 – 10 years after disease onset
    - Pancolitis
      - 1st decade = CS 8 years after onset
      - 2nd decade = CS q 3 years
      - 3rd decade = CS q 2 years
      - 4th decade = CS annually
    - Left sided Colitis
      - Begin screening 15 years after onset

- **Hereditary Nonpolyposis Colorectal Cancer (HNPCC) or Lynch Syndrome**

  - CS q 1 to 2 years beginning at age 20 or 10 years younger than the earliest case in the family, whichever comes first

- **Identified Genetic Mutation**

  - Refer to appropriate specialist

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This tool is based on the New Brunswick Colon Cancer Screening Guidelines (2013)
Document available from the New Brunswick Cancer Network (NBCN)
For details or a copy of the document, contact:
NBCN Coordinator — Cancer Screening 506-453-3521 or www.gnb.ca/health
### Appendix 2: Glossary of abbreviations

**Abbreviations**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ca</td>
<td>Cancer</td>
</tr>
<tr>
<td>CAG</td>
<td>Canadian Association of Gastroenterology</td>
</tr>
<tr>
<td>CCS</td>
<td>Canadian Cancer Society</td>
</tr>
<tr>
<td>CCSP</td>
<td>Colon Cancer Screening Program</td>
</tr>
<tr>
<td>CPG</td>
<td>Clinical Practice Guideline</td>
</tr>
<tr>
<td>CRC</td>
<td>Colorectal cancer</td>
</tr>
<tr>
<td>CS</td>
<td>Colonoscopy</td>
</tr>
<tr>
<td>CS-IIS</td>
<td>Cancer Screening – Integrated Information System</td>
</tr>
<tr>
<td>FAP</td>
<td>Familial Adenomatous Polyposis</td>
</tr>
<tr>
<td>FOBT</td>
<td>Fecal Occult Blood Test</td>
</tr>
<tr>
<td>FIT</td>
<td>Fecal Immunochemical Test</td>
</tr>
<tr>
<td>gFOBT</td>
<td>Guaiac Fecal Occult Blood Test</td>
</tr>
<tr>
<td>HHN</td>
<td>Horizon Health Network</td>
</tr>
<tr>
<td>iFOBT</td>
<td>Immunochemical Fecal Occult Blood Test</td>
</tr>
<tr>
<td>FS</td>
<td>Flexible Sigmoidoscopy</td>
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<td>NBCCSP</td>
<td>New Brunswick Colon Cancer Screening Program</td>
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<td>NBCN</td>
<td>New Brunswick Cancer Network</td>
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<td>VHN</td>
<td>Vitalité Health Network</td>
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Appendix 3: Acknowledgements

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This document, evaluation forms and related colon cancer screening reference tools are available online at: www.gnb.ca/health
