

IARC Handbooks Volume 17 : Colorectal Cancer Screening

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Background

Colorectal cancer (CRC) burden worldwide

- 3rd most common cancer in men and 2nd most common in women
- Almost 10% of the global cancer burden
- Incidence rates of CRC show a strong positive gradient with level of economic development
- Net five-year survival is around 60% in high-income countries; below 30% in the low-income countries in Asia and Africa.
- Risk factors: increased consumption of processed meat, alcoholic beverages, tobacco smoking, increased body fatness
- Protective factors: consumption of dietary fibre and dairy products, physical activity

Screening techniques evaluated

- **Stool-based blood tests:**
 - Guaiac-based faecal occult blood test (gFOBT), with or without rehydration
 - Faecal immunochemical test (FIT)
- **Endoscopic techniques:**
 - Flexible sigmoidoscopy
 - Colonoscopy
- **Emerging techniques:**
 - Computed tomographic colonography

Other topics covered

- Comparison of effects between stool-based blood tests and endoscopic techniques
- Other emerging techniques: capsule endoscopy, mt-sDNA, biomarkers in blood, urine or breath
- Determinants of participation in screening and interventions to increase participation
- Populations at an increased risk of colorectal cancer: genetic predisposition, family history of CRC, personal history of preneoplastic lesions or CRC

Evidence-based evaluations

Evaluations are based on a comprehensive review of the published scientific evidence.

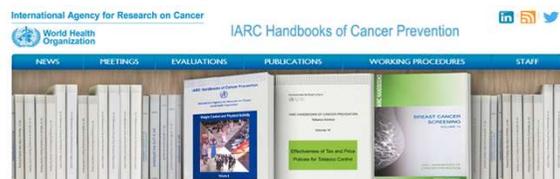
The majority of randomized controlled trials and observational studies have been conducted:

- in middle- to high-income settings, where colorectal cancer incidence is generally high;
- in asymptomatic, average-risk populations aged 50–70 years on average;
- under conditions in which colorectal cancer screening – including subsequent follow-up and treatment – can be delivered with high quality.

Extrapolation of the conclusions to different settings needs to take into account these and other context-related specificities.

Knowledge dissemination

- ✓ **Dedicated website @ <http://handbooks.iarc.fr>**



- Information about upcoming, recent and past meetings
- Tables of all evaluations from Volumes 1 through 16
- Access to all Handbook volumes, available online as pdfs
- Poster presentations of recent meetings (HB15 and HB16)
- Working Procedures and other documentation related to the Handbooks

- ✓ **Brochure and flyers for funding requests**

- ✓ **Summary reports in the *New England Journal of Medicine* (Lauby-Secretan et al., 2015; 2016)**



Evaluations

The evaluation statements on the level of evidence for the effects of the different colorectal cancer screening procedures refer to a setting without colorectal cancer screening as a comparator.

Technique	Reduction in CRC incidence	Reduction in CRC mortality	Benefit-harm ratio	Evidence for beneficial and adverse effects
Biennial screening with gFOBT without rehydration	ESLE	S	S	+ Reduced colorectal cancer mortality, gain in quality-adjusted life years - Short-term psychological harms of screening per se or of a positive test, medical harms of follow-up colonoscopy after a positive test
Annual/biennial screening with gFOBT with increased sensitivity	L	S	S	+ Reduced colorectal cancer mortality and incidence, gain in quality-adjusted life years - Short-term psychological harms of screening per se or of a positive test, medical harms of follow-up colonoscopy after a positive test
Biennial screening with FIT	L	S	S	+ Reduced colorectal cancer mortality and incidence, gain in quality-adjusted life years - Short-term psychological harms of screening per se or of a positive test, medical harms of follow-up colonoscopy after a positive test
Single screening with flexible sigmoidoscopy	S	S	S	+ Reduced colorectal cancer incidence and mortality, gain in quality-adjusted life years - Short-term psychological harms of screening per se or of a positive test, infrequent procedural harms of sigmoidoscopy, medical harms of follow-up colonoscopy after a positive test
Single screening with colonoscopy	S	S	S / L *	+ Reduced colorectal cancer incidence and mortality, gain in quality-adjusted life years - Medical harms (bleeding, perforations), psychological harms of screening per se and of a positive test. ± Variability and related limited accuracy of the effect estimates, harms of colonoscopy, limitations in extrapolating from data of screening by flexible sigmoidoscopy
Single screening with CTC	L / I *		I	+ No direct evidence for a beneficial effect in reducing CRC incidence or mortality; test performances and adenoma detection rates similar to colonoscopy - Harms of ionizing radiation, uncertain harms and benefits of extracolonic findings, uncertainty when quantitative data of beneficial and adverse effects are lacking

S, sufficient evidence; L, limited evidence; I, inadequate evidence, ESLE, evidence suggesting lack of effect. *, denotes a minority view. CTC, computed tomography colonography; gFOBT, guaiac-based faecal occult blood test; FIT, faecal immunochemical test.

Summary report in the *New England Journal of Medicine* (Lauby-Secretan et al., 2018)

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ACKNOWLEDGEMENTS

Financial support for the Handbooks was received from:
 o Institut National du Cancer (INCa), France
 o American Cancer Society, USA
 o Centers for Disease Control and Prevention, USA

We acknowledge the participation of Franca Bianchini (DKFZ, Germany) and Neela Guha (ESC/IMO) as rapporteurs during the meeting of HB17.

