

# French studies measure benefits of colorectal cancer screening

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The introduction of biennial colorectal cancer screening in a region of France increased the rate of diagnosis of high risk pre-cancerous adenomas (sometimes called polyps) by 89%, researchers have reported at the ESMO 2014 Congress in Madrid.

Dr Vanessa Cottet from INSERM Unité 866 in Dijon, France, and colleagues studied the region of Côte-d'Or, where a registry has been collecting data on adenomas since 1976. They wanted to evaluate the rate of diagnosis of adenomas before and after the initiation of a screening program using fecal occult blood testing that began in 2003.

The study included all residents aged between 50 and 74 years of age who had a first adenoma identified between January 1997 and December 2008. The researchers showed that 38.7% of these people had high-risk adenomas —meaning they were larger than 1 centimetre in diameter, involved the finger-like projections called villi in the intestinal lining, or exhibited a high grade of dysplasia.

For such high-risk adenomas, age-standardized diagnosis rates were 136 per 100,000 people before screening program and 257 per 100,000 after, which correlates to a percentage increase of 89%. The corresponding rates for non-advanced adenomas were 235 and 392 diagnoses per 100,000, with a percentage increase of 68%.

These results reinforce the value of extending organised mass screening programs for colorectal [cancer](#), the authors say. "It is very important that

public follows recommendations and participates in colorectal cancer screening campaigns," Cottet says. "Participation rate is a major issue for the success of such programs."

The authors also found that the rate of detection did not continue increasing between the 2005 and 2007 rounds of screening. However, they suggest that shifting the methodology used in the screening programs from the more common guaiac test to immunochemical testing will improve results in the future.

"Immunochemical fecal occult blood tests outperform guaiac tests for the detection of colorectal cancer and advanced adenoma," Cottet says. "They have doubled the detection rate of invasive colorectal cancer, mostly at early stages, and led to a fourfold increase in the detection rate of non-invasive colorectal cancer and advanced adenomas."

"Given the superior performance of immunochemical tests, it is reasonable to assume that an organized screening program using such tests would lead to a greater reduction of colorectal cancer death and probably to a reduction in colorectal cancer incidence."

Caption: Dr Vanessa Cottet and colleagues report that biennial colorectal cancer screening in France's Cote-D'Or region increased detection of high-risk polyps, but that the improvement recently plateaued

Commenting on the study, Professor Hans-Joachim Schmoll, former Head of the Division of Hematology and Oncology and Director of the Center for Cell and Gene Therapy, Martin Luther University, Halle, Germany and Professor of Medicine at Martin Luther University, Germany, said that many retrospective and prospective studies have clearly demonstrated the value of screening for adenoma, polyps and manifest colorectal cancer with respect to early diagnosis and treatment of precursor lesions and manifest tumours, and with regard to improving

survival.

"However, the question is which method is most appropriate with respect to accessing the target population, maximising participation in these programs, and efficacy, as well as costs," Schmoll said.

"The French trial reproduces the positive outcome from other studies by looking on the sequential period before and after 2003 when screening programs started in the Côte-d'Or region. They have shown that the stool test for occult blood (guaiac test) was effective by doubling the rate and therefore these data further support the value of screening programs in the general population with a given standard risk, as in this group of people aged 50-75 years."

"It can definitively be expected that the new FOBT-test could have produced even better results," Schmoll said. "Further strong improvement can be expected by the recent new combined test of FOBT together with a molecular test for specific mutations. These third-generation tests are going to be implemented in US and other countries."

However, the optimal method for increasing the detection rate is colonoscopy, or at least sigmoidoscopy, which is implemented as standard in Germany and in the US, at least for a high risk population, Schmoll said. These approaches can be called the 'gold standard', despite several drawbacks including risks from the procedure itself and potential false positive or negative results, he said.

## **Colonoscopy evaluated in patients at high risk of colorectal cancer**

For people who have been identified as being at higher risk of developing colorectal cancer, a screening program that uses colonoscopy

appears to be less efficient than using fecal occult blood tests, French researchers report.

Dr Sylvain Manfredi from CHU Pontchaillou in Rennes, France, and colleagues conducted their study in a region of the country where fecal occult blood test (FOBT) screening for people with average risk of colorectal cancer has been implemented for long time.

As part of the screening program, a pre-screening procedure is undertaken by a general practitioner or gastroenterologist to identify patients who are at higher than average risk of colorectal cancer based on their family history. Those patients were invited to undergo colonoscopy rather than FOBT.

The aim of the study was to estimate the positive predictive value of colorectal neoplasia in this high-risk group. Positive predictive value is a statistical measure that is defined as the ratio of true positive results to the number of times the test shows a positive result (which can include true positive results and 'false positives' where the test indicates a positive result but the patient does not actually have colorectal cancer).

Of 1179 patients studied, 889 underwent colonoscopy, the researchers report. Overall, 253 colorectal neoplasias were diagnosed including 35 cancers, and adenomas ([polyps](#)) in 219 patients. A total of 209 advanced adenomas were diagnosed.

The authors calculated that the positive predictive value of colonoscopy was 3.9% for cancer, 12.9% for advanced adenoma and 25% for adenoma overall.

This compared poorly to the positive predictive value in the average risk population selected by a positive FOBT, they say. In this population, the positive predictive value of the coloscopy done after positive test in their

administrative area ranges from 7.5% to 10% for cancer, from 15% to 27% for advanced adenoma and between 32% and 37% for adenoma.

"The take-home message is that the positive predictive value for colorectal neoplasia in high risk patients screened by colonoscopy is lower than it is for average risk patients screened by FOBT."

"As a result, we believe this population may benefit from fecal occult blood or immunochemical blood testing to select the best candidates for colonoscopy." Further studies are required to understand how best this could be achieved, Manfredi said.

"In the study from Manfredi, it was shown that a prediction for screening colonoscopy using high risk features —based on family history— revealed a less positive predictive value than pre-screening by FOBT with follow-up of those who have a positive result," Schmoll said.

"These data favour the widely used standard approach of routine use of FOBT followed by colonoscopy only when the FOBT test is positive, rather than colonoscopy first. Those patients with prior FOBT are at higher risk for having cancer or precursor lesion compared to those who are only identified by family history," Schmoll said.

"However, if colonoscopy is restricted only to those patients who have positive FOBT, there is a high chance that adenoma or even cancer can be not identified. FOBT can be negative in a number of patients despite the presence of adenoma, precursor lesions or even in early cancer. Therefore the optimal method remains the colonoscopy in all patients," Schmoll said.

"The data support the use of both options as part of a large national [screening program](#) which is adapted to several different groups, to optimize the outcome and increase the rate of cure," Schmoll noted.

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