Sundhedsstyrelsen
National Board of Health

SCREENING FOR COLORECTAL CANCER
THE SIGNIFICANCE OF PARTICIPATION RATES
– A Health Technology Assessment – Summary

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Front page: A drawing of the colon

Foreword

Colorectal cancer is a commonly occurring cancer in Denmark and has a high mortality rate. The vast majority of colorectal cancers develop from preliminary growths, and detection and removal of these can reduce the risk of cancer. Screening for colorectal cancer is therefore a chance to reduce the number of new cancer cases and mortality of colorectal cancer.

In 2001, the National Board of Health issued the Health Technology Assessment report "Colorectal Cancer: Diagnostics and Screening." The report recommended a feasibility study that would illustrate the possibilities for colorectal cancer screening in practice. Two feasibility studies were carried out in the counties of Vejle and Copenhagen in 2005-2006, and the results demonstrated that screening is possible to organise, and the number of cancers detected in early stages met expectations. Furthermore, only few complications arose. However, the participation rates were not as high as anticipated.

Because of the low rate of participation, the Cancer Steering Group wished to carry out a health technology assessment in order to shed light on the consequences. The current report is based on the results from the feasibility studies and assesses achieved clinical effect, risks associated with screening, and, most notably, the significance of participation rates for colorectal cancer screening. In line with the aims of the Cancer Steering Group, the report also deals with issues concerning organisation, staff requirements, and health economy.

This Health Technology Assessment report should be seen as providing advice to the Cancer Steering Group and input for other decision-makers within healthcare; the report's conclusions should therefore not be considered as an expression of the official recommendations of the Danish National Board of Health.

This report is issued as part of the "Health Technology Assessment" series at the National Board of Health and is the product of work done by an interdisciplinary project group. The members of the project group have declared any potential conflicts of interest. Prior to the report's publication, the report was peer-reviewed by relevant international experts.

The target group for this current Health Technology Assessment is the Cancer Steering Group, but the report is also considered relevant for other political and professional decision-makers in healthcare. The National Board of Health would like to thank everyone in the project group for their intensive and effective work, which has been a determining factor in the realisation of this report. In addition, special thanks are due to Torben Skovsgaard from Herlev Hospital and Sune Høirup Petersen and Mette Agerkvist from the Cochrane Colorectal Cancer Group, who have contributed to the report.

National Board of Health
May 2008

Finn Børlum Kristensen
Director of Health Technology Assessment

Summary

There are approximately 3,600 new cases of colorectal cancer[1] p.a. in Denmark. Every year approximately 2,000 Danes die from this disease, a mortality rate surpassed only by lung cancer in men and breast cancer in women.

In 2001, the Danish Centre for Health Technology Assessment issued the report "Colorectal Cancer: Diagnostics and Screening." The report recommended performing feasibility studies in at least two counties with the purpose of gaining further practical and organisational experiences and in addition, the feasibility studies should make it more likely that the conditions for the positive results from scientific studies could be achieved in a country-wide screening program, including a participation rate of at least 60 % among those invited and a rate of at least 40-50% of individuals with colorectal cancer being detected in an early stage (Dukes A or B).

The feasibility studies should also test strategies for information, communications and invitation to the test.

The feasibility studies were conducted in 2005-06 in the counties of Vejle and Copenhagen, where only 48 % of the target group accepted the invitation for a screening. With 64 % of the cancer cases detected in early stages, the results lived up to the anticipated number, while the practical conditions concerning organisation of screening procedures were in accordance with international standards. Finally, it could be concluded that no major complications occurred than those expected on the basis of international literature.

Based on the results of the feasibility studies, the Cancer Steering Group asked the National Board of Health to conduct a Heatlth Technology Assessment (HTA) to highlight the significance of:

- participation rates
- clinical effect
- risks.

The Cancer Steering Group also aimed to explore conditions concerning organisation, staff requirements and health economy.

Purpose

The purpose of this health technology assessment is to shed light on the consequences of low participation rates in screening for colorectal cancer in the population aged 50-74 years of age.

Target group

Target group for the report: National Cancer Steering Group and decision makers in healthcare.

Limitations

The current HTA report is a follow-up to the HTA report from 2001 and the feasibility studies in the counties of Vejle and Copenhagen. The focus of this report is therefo-

1 Colorectal cancer is used as a common term for both cancer in the colon and in the rectum.

re on screening of the population aged 50-74, who are examined for blood in their stools with faecal occult blood test (FOBT).

Because of the Cancer Steering Group's working timeframe, the report was developed at an accelerated pace. Given these conditions, it has not been possible to perform a socio-economic analysis, which likewise were not included in the HTA report from 2001.

Methods

A systematic literature review was conducted for all aspects – with the exception of health economic aspects - to address the HTA issues in this report. As this HTA is a follow-up of the HTA from 2001, focus was placed on systematic reviews and meta-analyses in literature published since. In addition to the general review, more specific, supplementary literature reviews were performed in some areas.

Economic model calculations were performed in order to address economic consequences involved.

Technological aspects

A long series of publications on colorectal cancer screening shows that the detection rate for colorectal cancer does not vary with different participation rates. The studies also do not suggest that a lower participation rate results in colorectal cancers being detected at a later stage, or in a lower number of people with pre-cancerous growths being detected. Existing studies show that mortality can be reduced by removing the pre-cancerous growths from the colorectal tract by identifying early cancer stages (Dukes A and B) and by reducing the number of emergency operations. Generally speaking, the risk for complications inherent in a colonoscopy is very low.

The consequence of low participation rates is that, as a whole, fewer cancer cases are detected, and that the total part of the population with early stages of cancer is not as high as it would be with a higher participation rate. This means that the lower the rate of participation, the greater the number of individuals with colorectal cancer who will end up in radiotherapy and chemotherapy or undergo emergency surgery.

Personal factors

A number of socio-economic factors impact participation in screening for colorectal cancer, as increased participation rates can be seen for women, the youngest and oldest age groups, married individuals and those with high income and high levels of education. Most studies address the examination for colorectal cancer and not the actual screening. Meanwhile, results from these studies can be easily transferred to screening studies. Most significant factors are linked to conditions that cannot be changed. However, in the feasibility studies, a multi-lingual information pamphlet was used, and there was an opportunity to get information by telephone in areas where the percentage of non-Danish speakers was high. Despite this, participation was lower than expected. The low rate of participation may reflect a general trend, as other screening studies also report a falling participation rate. A general lack of awareness regarding symptoms and, to a certain extent, lack of information concerning the screening may be part of the explanation for the low rate of participation. These conditions can presumably be changed through more targeted information, with the possible initiation of a nati-

onwide screening programme. Aside from the fact that the test is bothersome, public reaction to screening does not seem to be negative. However, there does appear to be some anxiety over the possibility of being given a cancer diagnosis. The psychological consequences of participation in screening for colorectal cancer have been discussed, but no negative long-term effect has ever been demonstrated in the literature.

Organisational factors

The literature did not present any reason to change any practical elements relating to screening methods, invitations, response to participants and contact options for participants to increase participation. New screening methods are on the way, where use of alternative and simplified methods for detection of blood in stools may increase participation in screening, but these have not yet been tested in randomised clinical trials. The introduction of screening for colorectal cancer will result in an increase in the number of colonoscopies between 10-12,000 per screening round over the course of two years, depending on rates of participation. Up to three centres per region would be realistic, depending on local conditions.

Economic factors

It is assessed whether colorectal cancer screening would be cost-effective at the participation rate observed in the feasibility studies. A calculation model was developed for this purpose, based on data from the feasibility studies, Statistics Denmark, the Cancer Registry, and literature. The model calculates costs per additional life year upon introduction of screening for colorectal cancer among Danes aged 50-74.

Analyses show that the rate of participation achieved does not affect cost-effectiveness in screening for colorectal cancer, and that the rate of participation would have to fall below 40% in order for the expenses for added life year to surpass DKK 100,000. These costs per additional life year correspond to the conditions inherent in screening for cervical cancer and breast cancer.

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