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Title: Population Screening for Colorectal Cancer

Agency: GR, Health Council of the Netherlands (Gezondheidsraad)

PO Box 16052, 2500 BB the Hague, the Netherlands; tel:+31 70 340 7520, fax:+31 70 340 7523; www.gr.nl

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Aim:

To review the epidemiology of CRC and to assess the scientific evidence regarding the efficacy and cost-effectiveness of different screening strategies.

Results and Conclusions:

Colorectal cancer (CRC) is the second leading cause of cancer-related mortality in the Netherlands, resulting in approximately 4400 deaths in 1998. Three randomized trials have shown that screening by fecal occult blood testing (FOBT) every 2 years has the potential to reduce mortality by up to 21%. According to a meta-analysis, the number needed to screen to prevent one death from CRC over 10 years is 1200 (700 to 2800). The real number is probably lower.

We do not have proof that other screening strategies for CRC can reduce mortality. However, much clinical and epidemiological evidence suggests that flexible sigmoidoscopy (FS) or total colonoscopy and removal of colonic polyps may effectively reduce CRC-related mortality and incidence. Screening programs based on FS may be more cost-effective than those based on FOBT. FS screening could even result in a net savings of direct healthcare costs due to prevention of cancer treatment costs.

Colonoscopic screening may be less cost-effective than FS screening, unless delivered at less frequent intervals (10-year or a one-time examination).

A recent contender for screening is virtual colonoscopy. This developing technology (computed tomography or MRI colography) has several potential advantages as a screening test. An economic analysis indicates that to become cost-effective, virtual colonoscopy would need to be offered at a very low price or result in compliance rates superior to those associated with conventional colonoscopy.

Recommendations:

It is recommended that a national policy on population screening for CRC be developed. A first priority is to resolve remaining issues, such as: which screening test should be used, at what ages, how often, and who is going to do these investigations. Other important questions are the acceptability of screening for CRC, the GP's role, the program organization and evaluation, quality assurance, and the indications for surveillance colonoscopy of those who screen positive.

It is recommended that feasibility studies and pilot trials be conducted and that a simulation model be developed to make well-founded judgements about screening strategies. The most uncertain aspects of the present models are the dwelling time distribution of adenomas that grow into cancer, and the percentage of cancers not preceded by adenomas. Simulation outcomes depend heavily on assumptions about the natural history of CRC. Better estimates can be made after analysis of observational data from CRC screening trials and surveillance studies. Such an analysis is being conducted in Rotterdam, taking advantage of emerging data in this area. It is recommended that these validation studies and more detailed modeling be used, and that feasibility studies and pilot trials also be conducted in planning for a possible national CRC screening program.

Methods:

The relevant literature was surveyed and experts were consulted. The draft report was subjected to independent peer review.

Written by Willem A van Veen, M.D., Health Council of the Netherlands,GR