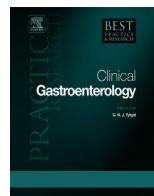




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Ethical issues in colorectal cancer screening



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In many countries, colorectal cancer screening is currently an established population screening program due to the evidence on its reduction of colorectal cancer mortality. There is general consensus that colorectal cancer screening meets the screening criteria as proposed by Wilson and Jungner. However, as for all population screening programs, colorectal cancer screening also has disadvantages and thereby entails ethical issues. There are the general issues concerning the introduction of screening programs (e.g. medicalization, overdiagnosis and overtreatment, information provision to screenees), evaluation of cancer screening programs (e.g. lead time and length bias), chosen screening method (e.g. false-positive and false-negative test results, reduction of all-cause mortality, choice between different screening methods). The different colorectal cancer screening methods and the ethical issues concerning colorectal cancer screening will be discussed in this review.

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Introduction

Screening for cancer has an extensive history, with screening for cervical cancer being introduced in the United States as early as the 1950s and 1960s [1], and screening for breast cancer in the early 1980s [2]. Colorectal cancer (CRC) screening in the United States experienced a slow start in the early 1990s, but was broadly recommended after evidence from three randomized controlled trials (RCTs) on the effect of faecal occult blood test (FOBT) screening was published in the mid 1990s [3–5]. The rationale behind all these three cancer screening programs is that early detection of cancer (before symptoms arise) will reduce cause-specific mortality.

Colorectal cancer is an important health problem; it is the second most frequently occurring malignancy and the second leading cause of cancer-related death in Europe and the third most common cancer in the United States of America [6,7]. Colorectal cancer has a strong correlation with age, with CRC far more frequently occurring in elderly people. Therefore, the ageing of the population will increase the total colorectal cancer burden [8].

CRC originates from mucosal cells in the colon and rectum and usually (depending on the DNA mutation mechanism involved) develops in a time frame of 10–15 years, starting with the formation of a colorectal polyp [9]. In this long preclinical stage, there is an opportunity for cancer prevention by detection and removal of premalignant lesions and early cancers. The main prognostic factor for CRC is the stage at the time of diagnosis [10]. Detection of CRC in an early stage considerably improves prognosis. As CRC symptoms often occur late in the course of the disease, diagnosis in regular health care is often in a later stage than can be achieved by screening [11,12]. The fact that colorectal cancer presents an important health burden, the possibility for prevention by removing precursors, and early detection of CRC resulting in lowering of morbidity and mortality makes CRC an attractive target for population screening.

Although cancer screening programmes may be widely accepted, a number of ethical considerations need to be taken into account, such as the risk of overdiagnosis and overtreatment, medicalization of society, the challenges of false-positive and false-negative findings, and the introduction of guilt (for non-participation in screening) and fear (for cancer) in the target population. These ethical challenges will be discussed in this paper.

Colorectal cancer screening tests

A unique feature of CRC screening is the availability of multiple screening strategies with distinct features, advantages and drawbacks. The most important ones are:

Faecal occult blood testing

FOBT is a broadly recommended, non-invasive test that can be carried out at home [13–15]. FOBT aims at the detection of occult (invisible for the naked eye) blood in the stool. Several FOBT variants have been developed, with the most commonly used variants being the guaiac faecal occult blood test (gFOBT) and faecal immunochemical test (FIT). Persons with a positive FOBT are referred for colonoscopy. A single FOBT has a relatively low sensitivity for cancer, participation in multiple, consecutive screening rounds is required to achieve adequate sensitivity (also referred to as program sensitivity) [16]. The FOBT is recommended annually or biennially. Uptake for the FOBT in population-based screening programmes ranged from 17% to 90% for first round screening; at subsequent screening rounds from 22% to 64% [17,18]. gFOBT has been shown to reduce CRC mortality by 14–16% [19,20]. No data on mortality reduction are available for FIT screening.

Flexible sigmoidoscopy

Flexible sigmoidoscopy (FS) is a hospital-based endoscopic examination of the distal part of the colon and of the rectum (up to the descending colon or the splenic flexure). The procedure itself usually takes about 5–10 min. The required preparation is an enema, that can be administered at home, and fasting a few hours prior to the procedure. An important advantage is the fact that CRC precursor

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