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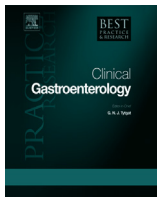

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Training non-physicians to do endoscopy: Feasibility, effectiveness and cost-effectiveness

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A B S T R A C T

Colorectal cancer (CRC) is one of the most common cancers in women and men worldwide. Training non-physicians including nurses, nurse practitioners, and physician assistants to perform endoscopy can provide the opportunity to expand access to CRC screening as demand for endoscopic procedures continues to grow. A formal program, incorporating didactic instruction and hands-on practice in addition to oversight, is required to train non-physicians to perform endoscopy as safely and effectively as physicians. Additionally, the context in which the non-physician endoscopy program is organized will dictate key program characteristics including remuneration, participant recruitment and professional and legal considerations. This review explores the

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evidence in support of non-physician based endoscopy, potential challenges in implementing non-physician endoscopy and requirements for a high-quality program to support training and implementation.

Introduction

Colorectal cancer (CRC) is one of the most common cancers in women and men worldwide [1]. It is estimated that 132,700 persons were diagnosed with CRC in the United States in 2015 [2]. CRC screening is recommended for persons at average risk with fecal occult blood test (FOBT), flexible sigmoidoscopy (FS) [3], or colonoscopy [4]. FS, a procedure associated with minimal risk, requires less bowel preparation, does not require sedation, and is faster to complete than colonoscopy. Of the four randomized controlled trials (RCTs) of FS [5–8], three show a reduction in CRC mortality [6–8] and recent meta-analysis of these trials show an 18% relative risk reduction in the incidence of CRC and a 28% reduction in CRC mortality [9]. Additionally, a reduction in CRC mortality was found in a longer-term follow-up study [10] of the one trial that did not show an initial reduction in CRC mortality [5]. Another meta-analysis [11] found that screening sigmoidoscopy reduced distal CRC incidence and mortality by 31% and 46%, respectively [11]. On the other hand, RCT level evidence regarding the effect of screening colonoscopy on CRC incidence and mortality is not currently available.

The extant literature has shown that non-physicians including nurses, nurse practitioners, and physician assistants can perform endoscopy safely and effectively. This provides the opportunity to expand access to CRC screening. Additionally, numerous professional organizations have endorsed non-physician FS including the Society of Gastroenterology Nurses and Associates (SGNA) [12], the Canadian Association of Gastroenterology (CAG) [13], and the American Society for Gastrointestinal Endoscopy (ASGE) [14]. This review explores the evidence in support of non-physician based endoscopy, potential challenges in implementing non-physician endoscopy and requirements for a high-quality program to support training and implementation.

Existing non-physician flexible sigmoidoscopy programs

The performance of FS by nurses has been reported in the literature as early as the 1970s [15]. It is essential that there is access to effective CRC screening to maximize benefit from the impact that interventions like FS can offer to reduce CRC morbidity and mortality [16]. To provide adequate screening capacity, several jurisdictions have developed non-physician FS screening programs.

Kaiser Permanente, California, USA

Kaiser Permanente in Northern California, USA is a health maintenance organization (HMO) serving over nine million health plan members that successfully developed one of the first nurse FS programs, in the early 1990s, to screen for CRC. The program was fundamental in helping to achieve screening rates of 80% among HMO members [17] as part of the Colon Cancer Prevention Program (CoCaP) that provided sigmoidoscopy-based screening to all average-risk members once every ten years beginning at age 50 [17,18]. More than 100,000 sigmoidoscopies were performed in the first two years of the program. Data from the CoCaP program suggest that non-physicians quickly became as proficient as physician endoscopists in regards to depth of insertion and polyp detection [17]. However, since 2010, the program has gradually wound down, in large part due to the implementation of the fecal immunochemical test (FIT) for CRC screening [19].