Virtual colonoscopy – CT colonography

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Policy contains: colonography, colonoscopy

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Coverage policy

Screening using virtual colonoscopy, also known as computed tomography (CT) colonography, may be clinically proven and, therefore, medically necessary for colorectal cancer when any of the following criteria is met:

- **A conventional colonoscopy is contraindicated due to the presence of lower gastrointestinal bleeding, colonic stenosis, colonic obstructions, diverticulosis, or diverticulitis.**
- **The member had complications with a prior colonoscopy.**
- **The member is taking anticoagulation medicine or is otherwise at risk for a bleeding disorder.**
- **The member has an elevated risk from sedation during a colonoscopy, due to conditions such as chronic obstructive pulmonary disease, hypotension from sedation, a recent acute myocardial infarction, recent colonic surgery, or a previous adverse reaction to anesthesia.**
- **The member has obstructive colorectal cancer.**

If any of the above criteria is met, virtual colonoscopy/CT colonography can be performed every five years beginning at age 45 and up to age 75 (Rex, 2017a, 2017b; Shaukat, 2021), and selectively offered from ages 76 to 85, if the member and provider elect, after taking into account member's overall health and prior screening history (U.S. Preventive Services Task Force, 2021).

Limitations

Screening for colorectal cancer using virtual colonoscopy/CT colonography for members with inflammatory bowel disease is investigational/not clinically proven, and therefore, not medically necessary.

Alternative covered services

- **Conventional colonoscopy**
- **Double contrast barium enema**
- **Fecal immunochemical test**
- **Fecal occult blood test**
- **Flexible sigmoidoscopy**

Background

Colonoscopy has long been the preferred procedure for colorectal cancer screening. Along with the ability to detect malignancies, colonoscopy can detect precancerous polyps, which can often be removed during the same procedure. Greater use of the test, with its ability to detect and remove polyps before they become cancerous, constitutes a major factor in the decline of about 50% in age-adjusted U.S. colorectal cancer incidence and mortality since 1985 (National Cancer Institute, 2022).

Colonoscopy is recommended for men and women every 10 years beginning at age 45 for persons not at risk for colorectal cancer. Persons with a documented risk factor may be screened earlier. Experts state that screening with colonoscopy for persons ages 76 to 85 should be a case-by-case decision, taking into account patient health and prior screening history; and that screening should be discontinued for persons older than age 85 (U.S. Preventive Services Task Force, 2021).

The recommendation to perform a colonoscopy is based on the observation that polyps often take 10 to 15 years to develop into cancer. However, in 2020, 28.4% of Americans ages 50 to 75 were not up to date with colon cancer screening; 19.9% had never been screened. Alternative means of cancer screening include double-contrast barium enema, fecal immunochemical testing, fecal occult blood testing, flexible sigmoidoscopy, stool DNA testing, and virtual colonoscopy — also known as CT colonography (U.S. Centers for Disease Control and Prevention, 2021).

Advantages of virtual colonoscopy/CT colonography include greater comfort to the patient, no sedation (and thus no anesthetic risk), and no patients being disqualified for certain medical reasons. Virtual colonoscopy/CT colonography requires less time to complete and return to normal activities than colonoscopy, carries no risk of surgical complications [four colonoscopy patients per 10,000 experience perforations, and eight per 10,000 have major bleeds (Lin, 2016) and avoids the factor of unwillingness that some patients have with colonoscopy.

The major concern with virtual colonoscopy/CT colonography is whether it can detect small polyps as effectively, and thus experts typically contend that virtual colonoscopy/CT colonography should be

performed more often than colonoscopy, usually every five years. Providers of virtual colonoscopy/CT colonography are unable to take tissue samples or remove polyps simultaneously as they can with colonoscopy. Virtual colonoscopy/CT colonography also exposes the patient to radiation from computerized tomography, although radiation-free medical resonance can be used instead of a CT scan.

Findings

The U.S. Preventive Services Task Force recommends colorectal cancer screening beginning at age 45, and ending sometime between ages 76 and 85, depending on patient health status. The Task Force recommendation lists tests used for screening, including CT colonography. Without recommending which method should be used, the Task Force does specify the frequency for each (five years for CT colonography). It notes CT colonography may reveal extracolonic findings needing further workup, which could lead to potential benefits or risks (U.S. Preventive Services Task Force, 2021).

The U.S. Multi Society Task Force on Colorectal Cancer supported CT colonography every five years starting at age 50 for average-risk persons (and age 45 for African Americans) as a "second-tier" approach; then discontinue it at age 75, or if patient life expectancy is 10 years or less (Rex, 2017a; 2017b).

The National Comprehensive Cancer Network supported CT colonography for average-risk persons older than 45 every five years if polyps are not found, and every three years if one to two lesions of 6 – 9 millimeters are detected; if more than three lesions 6 – 9 millimeters are detected, colonoscopy is supported (National Comprehensive Cancer Network, 2022).

The American Cancer Society supports screening in average risk persons starting at age 45 (qualified recommendation) or 50 (strong recommendation) using a high-sensitivity stool-based test or a visual examination; CT colonography is recommended every five years (Wolf, 2018).

An American College of Physicians guidance statement recommends screening for average-risk patients from ages 50 to 75; virtual colonoscopy/CT colonography should be performed every five years. Screening should be discontinued at age 75, or if patient life expectancy is less than 10 years (Qaseem, 2019).

The American College of Gastroenterology recommends colorectal cancer screening start at age 50 (instead of age 45) for low-risk persons; after age 75, screening should be an individual choice. Recommended primary screening modules are colonoscopy and fecal immunochemical tests, with consideration of others, including CT colonography (every five years), for patients unable or unwilling to undergo primary modules (Shaukat, 2021).

The American Association of Family Physicians supports colorectal cancer screening in all patients from ages 50 to 75, and in selected patients after 75. The choice of screening modality, including CT colonography, should be based on a shared decision-making discussion of benefits and harms between patient and provider (American Association of Family Physicians, 2021).

An American College of Radiology practice parameter lists particular indications when CT colonography should be performed on low-risk or moderate-risk patients, but does not specify the age when screening should begin (American College of Radiology, 2019).

A systematic review prepared for the U.S. Preventive Services Task Force included nine studies (n = 6,497) that found the sensitivity of CT colonography with bowel preparation to detect adenomas larger than 6 millimeters was 86%, similar to that of colonoscopy (89%) (Lin, 2021).

A meta-analysis of 125 studies included 27 (n = 33,493) of CT colonography. Compared with multitarget stool DNA (3.4%) and fecal immunochemical testing (2.0%), CT colonography had a detection rate of advanced neoplasia of 6.0%. Authors state that CT colonography "represents the most effective and efficient noninvasive screening test for colorectal cancer prevention and detection" (Pickhardt, 2021).

A systematic review of 19 articles (n = 11,540) determined CT colonography sensitivity and specificity to be 80% and 89% to detect polyps at least 6 millimeters in size; the same figures were 87% and 97% for polyps of at least 10 millimeters (Yu, 2017). Comparable figures in another large review of 14 studies (n = 3,578) were 87% and 90% for polyps over 6 millimeters, and 91% and 98% for polyps over 10 millimeters (Bai, 2020).

A systematic review/meta-analysis of 23 studies found similar sensitivity/specificity rate for diagnosing colorectal cancer for magnetic resonance colonography (97%/92%) and CT colonography (96%/100%) (Sun, 2018).

A systematic review/meta-analysis of 48 studies (n = 113,546) found prevalence of colorectal cancer for persons undergoing virtual colonoscopy/CT colonography was higher than those who did not (5.7% and 3.9%), *P* =.004) (Flor, 2018).

A systematic review/meta-analysis of 12 studies (n = 19,867) observed that three years after CT colonography, 643 were diagnosed with colorectal cancer. Another 29 colorectal cancers were subsequently diagnosed post-imaging, mostly from perceptual errors. Authors conclude CT colonography does not lead to an excess of post-test cancers relative to colonoscopy within three to five years, and the low five-year post-imaging rate supports a five-year screening interval (Obaro, 2018).

References

On January 25, 2023, we searched PubMed and the databases of the Cochrane Library, the U.K. National Health Services Centre for Reviews and Dissemination, the Agency for Healthcare Research and Quality, and the Centers for Medicare & Medicaid Services. Search terms were "colonography" and "colonoscopy." We included the best available evidence according to established evidence hierarchies (typically systematic reviews, meta-analyses, and full economic analyses, where available) and professional guidelines based on such evidence and clinical expertise.

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Policy updates

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