

## Virtual Colonoscopy: Role in CRC Screening, Today and in the Near Future

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Evidence-based US guidelines recommend that all asymptomatic, average-risk women and men be offered screening for colorectal cancer beginning at age 50 using one of five options: annual fecal occult blood testing, flexible sigmoidoscopy every five years, the combination of fecal occult blood testing and flexible sigmoidoscopy, double-contrast barium enema every five years, or colonoscopy every ten years. Most US gastroenterologists prefer the option of direct screening with colonoscopy because it is the most accurate way of detecting early cancers and premalignant polyps, and infrequent screening is effective. However, the resources and capacity to conduct colonoscopy screening of the entire average-risk population currently may be lacking. Virtual colonoscopy (VC) (CT colonography) is a promising technique that might bolster our screening capacity and increase overall screening compliance. VC already has been shown to be more accurate than double-contrast barium enema and has several obvious advantages over conventional colonoscopy. Examination time is shorter and there is no need for conscious sedation with its attendant cost and complications. The procedure has little risk, allows scrutiny of both sides of the bowel wall and of bowel folds, and precisely localizes lesions. It can examine the proximal colon before surgery when a distal obstructing cancer prevents passage of a colonoscope. Disadvantages of VC include radiation exposure, the need for a very thorough bowel cleansing preparation and for a somewhat disagreeable gas distention of the colon. Colonic spasm or retained stool or fluid substantially interferes with the interpretation of findings. Many centers report a long learning curve to set up and read these complex scans, and reading requires appreciable expensive radiologist time. Several studies report a low accuracy for detecting flat sessile lesions, and there are many false-positive scans. A final obvious major limitation of virtual colonoscopy is that it is diagnostic only. Whenever a clinically significant neoplasm is found, the patient must undergo a colonoscopy to biopsy or resect the lesion.

The published sensitivity of VC for detecting advanced adenomatous polyps ( $\geq 1$  cm) has varied widely in US studies. However, a recent three-hospital study by Pickhardt et al involving 6 radiologists and 1233 mostly average-risk patients demonstrated, I believe, the future of this rapidly evolving technology. Using advanced methodology that included oral contrast, multidetector CT scanners, and initial 3-D readings, they showed that VC could be as accurate for detecting polyps  $\geq 6$  mm in diameter as optical colonoscopy. If these results can be duplicated in most major clinical centers, and if other issues of cost, bowel prep, radiation exposure, and compliance are adequately addressed, VC soon should be added to the CRC guidelines' menu of screening options. This technique could supply much of the currently unavailable capacity for colonoscopy screening and would increase overall screening rates.