Digital rectal examination versus spontaneous passage of stool for fecal occult blood testing
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CRD summary
This review concluded that faecal occult blood tests that used stool obtained during digital rectal examination appeared to be less effective at detecting advanced adenomas than when using stool spontaneously passed; cancer detection was similar. Limitations of this review and the available evidence mean that the conclusions should be treated with caution.

Authors' objectives
To compare the accuracy of faecal occult blood tests (FOBT) when stool was obtained from digital rectal examination or spontaneously passed specimen in patients who underwent screening for colorectal cancer.

Searching
PubMed, Cochrane Central Register of Controlled Trials (CENTRAL) and CINAHL were searched without language restrictions to August 2011. References of retrieved studies were scanned. Conference abstracts from a gastroenterology society were searched between 2003 and 2011. Search terms were reported.

Study selection
Studies were eligible if they compared the yield of positive FOBT tests using stool collected on digital rectal examination and from spontaneous passed samples in asymptomatic screening populations. Diagnosis needed to be confirmed using colonoscopy. All the included studies were conducted in USA or Japan. Most studies used three spontaneously passed stool samples and one sample obtained from digital rectal examination. Where reported mean ages ranged from 60 to 66 years; gender distribution was poorly reported but suggested more men were evaluated.

Two reviewers independently selected studies for the review.

Assessment of study quality
Study quality was assessed using the Newcastle Ottawa Scale to give each study a score out of nine.

The authors did not state how many reviewers conducted the quality assessment.

Data extraction
Two reviewers extracted data on the incidence of non-advanced and advanced adenomas and colorectal cancer. Rather than producing estimates of diagnostic accuracy for each technique compared to colonoscopy, detection rates for the two techniques were compared directly by calculating odds ratios (OR) and 95% confidence intervals (CI). Advanced adenoma was defined as a polyp that was 1cm or larger, had a villous component on histology or had high-grade dysplasia. Study authors were contacted for missing data.

The authors did not state how many reviewers extracted data.

Methods of synthesis
Pooled odds ratios and 95% CIs were calculated using fixed-effect and random-effects models. Heterogeneity was assessed using $\chi^2$ and $I^2$ statistics. Where statistically significant heterogeneity was observed, this was investigated by excluding studies in turn from the analysis. Publication bias was investigated using funnel plots.

Results of the review
Seven cohort studies met the inclusion criteria (1,835 participants, range from 69 to 672); three were retrospective and four were prospective. Six of the studies scored 9 on the quality assessment and one scored 8.

The odds of detecting advanced adenomas confirmed on colonoscopy was significantly lower when stool was obtained from digital rectal examination samples (OR 0.63, 95% CI 0.47 to 0.86; $I^2$=40%). There was no significant difference between tests using stool from spontaneously passed samples and digital rectal examination for colonoscopy findings that were normal or that identified neoplasms, non-advanced adenomas or colorectal cancer. There was no evidence of
publication bias.

Authors' conclusions
Digital rectal examination for FOBT appeared to be less effective at detecting advanced adenomas compared with using stool spontaneously passed despite cancer detection being similar. Use of spontaneously passed stool for FOBT appeared to be statistically superior to using stool from digital rectal examination.

CRD commentary
The review addressed a clear question using reproducible inclusion criteria. The authors searched several relevant sources using methods aimed at reducing publication and language biases. The authors stated that the funnel plot showed no significant publication bias but it appeared asymmetrical and there were too few studies included for the results of such an analysis to be reliable. Study selection was conducted in duplicate; it was unclear whether similar methods to reduce error and bias were employed during data extraction and quality assessment. Quality was assessed using criteria for cohort studies which included a range of relevant criteria but did not assess the full range biases that may have been present in these studies.

The statistically significant pooled estimate for advanced adenomas was derived from a fixed-effect meta-analysis. There were too few study details to assess the level of clinical and methodological heterogeneity across studies to determine whether this choice was appropriate and it was unclear whether the estimate would retain statistical significance if a random-effects model was used. The overall sample size of the meta-analyses was small, which may mean there was a lack of power to detect a significant difference for some outcomes (particularly the rarer outcome of colorectal cancer). The review was restricted to patients with a positive FOBT and the average age was high, so the population evaluated was at higher risk than the general screening population and this was reflected in the incidence rates presented.

Given the limitations of the review and the available evidence and potential biases of the included studies that were not assessed, the conclusions should be treated with caution.

Implications of the review for practice and research
Practice: The authors stated that as advanced adenomas were treatable during colonoscopy to prevent development to colorectal cancer, FOBT using spontaneously passed stool was the preferred technique for further evaluation and treatment. They also said that a positive test using either method should lead to the conduct of a colonoscopy and that the best screening method for symptomatic patients may be colonoscopy.

Research: The authors did not report implications for research.

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