

Title Computed tomography colonography for the diagnosis or exclusion of colorectal neoplasia

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Aim

To conduct a HTA to determine whether computed tomography colonography (CTC) is effective and safe for detection or exclusion of colorectal cancer (CRC) for patients who have previously undergone an incomplete or technically difficult colonoscopy, are contraindicated for colonoscopy, or have limited access to colonoscopy, in order to inform a decision on public funding.

Conclusions and results

No evidence was found comparing CTC with double contrast barium enema (DCBE) or delayed colonoscopy in the exact populations being assessed, therefore the criteria were extended to include all patients at high risk or symptomatic for CRC.

Safety and patient acceptability

CTC is as safe, or safer than, DCBE, with equivalent rates of serious adverse events and fewer minor events. One large randomised trial (the SIGGAR trial) showed that repeat testing due to clinical uncertainty was more frequent after DCBE than CTC. Additional investigation due to suspected polyps is more likely after CTC than DCBE (indicating higher sensitivity). Evidence from 7 studies showed CTC to be more acceptable to patients than DCBE, and is associated with less worry and discomfort than DCBE. More patients would be willing to undergo CTC again.

In one high quality systematic review which compared the acceptability of CTC and colonoscopy (without a specified delay period) in patients who had undergone both procedures, patients preferred CTC. Pooled estimates showed patients were more likely to prefer CTC if it was for screening purposes, and if they knew they had a low likelihood of requiring colonoscopy.

Effectiveness

The 4-year survival rate for patients receiving CTC is the same as for those receiving DCBE. It is unknown if there is any survival benefit associated with CTC compared with delayed colonoscopy.

CTC is more sensitive than DCBE. Thus, a patient's CRC is more likely to be identified using CTC than DCBE, and when a patient is ruled out by CTC the radiologist has greater confidence that there is truly no lesion than when a patient is ruled out by DCBE. Consequently, CTC is a more accurate

way of ruling out patients who do not need further investigations (e.g. colonoscopy); it results in fewer false negative diagnoses than DCBE. Patients who receive a false negative result from DCBE would have a delayed diagnosis, compared with if they had been investigated with CTC. Results also indicate that CTC can be slightly less specific than DCBE; that is, more patients are referred for further unnecessary investigations after CTC than would be the case for DCBE (i.e. more false positive diagnoses).

Survival outcomes for CRC are highly stage dependent. Although this finding may be partially due to lead-time bias, evidence from a screening population suggests that earlier diagnosis is associated with improved health outcomes. Findings from a symptomatic population suggest the reverse (i.e. better survival with longer waiting periods), but it is likely that this result is confounded because of the lack of stratification by disease stage and severity.

Economic analysis

Due to the introduction of screening in Australia, patients who have a positive FOBT results are likely to represent an increasing proportion of patients presenting with CRC symptoms. Cost-effectiveness of CTC compared with DCBE improves as the prevalence of CRC in the target population increases. The difference in CTC and DCBE sensitivity is the key determinant of their comparative effectiveness and the main source of uncertainty in the economic analysis.

Additional consideration

Studies reported that repeat colonoscopies may be avoided if modifiable factors such as patient discomfort, poor bowel preparation and redundant colon are corrected with available techniques, and only patients for whom there is a clear clinical indication are considered for CTC following incomplete colonoscopy.

Methods

Following a protocol developed *a priori*, a systematic literature search was designed to identify evidence for the clinical effectiveness, safety and acceptability of CTC. Studies were screened using predefined criteria with colonoscopy as a reference standard. Direct and linked evidence were sought to assess clinical effectiveness.

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