INAHTA Briefs

Issue 2010/180

Title **Chemoprevention of Colorectal Cancer: Systematic Review and Economic Evaluation**

Agency **NETSCC, HTA, NIHR Evaluation and Trials Coordinating Centre**
Alpha House, University of Southampton Science Park, Southampton, SO16 7NS, United Kingdom;
Tel: +44 2380 595 586, Fax: +44 2380 595 639; hta@soton.ac.uk, www.hta.ac.uk

Reference Volume 14.32. ISSN 1366-5278. www.hta.ac.uk/project/1696.asp

Aim

To evaluate the clinical and cost effectiveness of drug and micronutrient interventions in preventing colorectal cancer (CRC) and/or adenomatous polyps.

Conclusions and results

Interventions considered include: nonsteroidal antiinflammatory drugs (NSAIDs), including aspirin and cyclo-oxygenase-2 (COX-2) inhibitors; folic acid; calcium; vitamin D; and antioxidants, eg, vitamin A, vitamin C, vitamin E, selenium, and beta-carotene. Chemoprevention was assessed in the general population, in individuals at increased risk of CRC, and in individuals with familial adenomatous polyposis (FAP) or hereditary nonpolyposis colorectal cancer (HNPCC). A search identified 44 relevant RCTs and 6 ongoing studies. Studies of aspirin versus no aspirin in individuals with a history of adenomas or CRC demonstrated reductions in risk of adenoma recurrence and advanced adenoma incidence. In the general population, studies of aspirin with a 23-year follow-up demonstrated a reduction in CRC incidence. A small study of aspirin in FAP patients demonstrated a possible reduction in polyp size. Use of celecoxib in individuals with a history of adenomas gave reductions in risk of adenoma recurrence and advanced adenoma incidence. Studies of non-aspirin NSAIDs in individuals with FAP demonstrated reductions in polyp number and size. No studies assessed non-aspirin NSAIDs in the general population. Studies of calcium in individuals with a history of adenomas demonstrated a reduced risk of adenoma recurrence, but no significant reduction in risk of advanced adenomas. In the general population, there was no significant effect of calcium on risk of CRC, although studies were of relatively short duration. Calcium use by FAP patients produced no significant reduction in polyp number. Folic acid showed no significant effect on adenoma recurrence or advanced adenoma incidence in individuals with a history of adenomas, or on incidence of CRC in the general population, although population studies were of relatively short duration. Studies of antioxidants demonstrated no significant effect on adenoma recurrence in individuals with a history of adenomas, or on incidence of CRC in the general population. There were no studies of folic acid or antioxidants in individuals with FAP or HNPCC. Economic analysis suggests that chemoprevention has the potential to represent a cost-effective intervention, particularly when targeted at intermediate-risk populations following polypectomy. Both aspirin and NSAIDs are associated with adverse effects so it would be important to consider the risk-benefit ratio before recommending these agents for chemoprevention.

Recommendations

See Executive Summary link www.hta.ac.uk/project/1696.asp.

Methods

See Executive Summary link www.hta.ac.uk/project/1696.asp.

Further research/reviews required

Some interventions (aspirin, NSAIDs, and calcium) significantly reduced adenoma recurrence in individuals with a history of adenoma. Further research is needed to investigate the longer-term risk-benefit of potentially effective chemopreventive agents (eg, whether there is a dose level with significant benefit without unacceptable toxicity), necessary treatment durations, whether an effect on colorectal cancer can be demonstrated, and for how long the benefits are maintained after the intervention is stopped. Larger studies with longer treatment (eg, 10 years or more) and follow-up (eg, 20 years) and studies assessing colorectal cancer incidence as an outcome would be valuable.

Written by Dr Katy Cooper, University of Sheffield, NETSCC, United Kingdom

ISSN 1654-501X