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Extended Research Article

Multi-cancer early detection tests for general population screening: a systematic literature review

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Plain language summary

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Plain language summary

Cancer screening is only available for some cancers. New tests that look for signs of cancer in blood (blood-based multi-cancer early detection tests) are being developed; they aim to detect multiple different cancers at an early stage, when they are potentially more treatable. Taking account of stakeholder feedback, we reviewed all studies assessing the effectiveness of blood-based multi-cancer early detection tests for cancer screening. We thoroughly searched for relevant studies and found over 8000 records. We included 30 completed studies and 6 ongoing studies of 13 different tests. None of the studies were of good quality, mainly because they did not properly check whether the test result might have been incorrect and whether participants with a negative test result actually had cancer. Most studies included participants who are different from the general United Kingdom population that would likely be invited for this type of cancer screening test. None of the studies reported meaningful results for patient-relevant outcomes, such as death, potential harms, quality of life and acceptability. We found 14 completed studies assessing 6 tests that are currently available: Galleri® (GRAIL, Menlo Park, CA, USA), CancerSEEK (Exact Sciences, Madison, WI, USA), SPOT-MAS™ (Gene Solutions, Ho Chi Minh City, Vietnam), Trucheck™ (Datar Cancer Genetics, Bayreuth, Germany), Cancer Differentiation Analysis (AnPac Bio, Shanghai, China) and AICS® (AminoIndex Cancer Screening; Ajinomoto, Tokyo, Japan). All of the tests were quite good at ruling out cancer, but their accuracy for finding cancer varied a lot, mostly because of differences in the study methods and characteristics of the included participants. The tests were better at finding more advanced cancers, which are potentially less curable than early cancers, so more research is needed to know whether tests would actually save lives. Better-designed studies including participants similar to those who might get the test in the real world, and which report on patient-relevant outcomes and properly consider patient experience and impact on services, are needed. Several new studies are planned or underway.

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This article

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