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Does the PSA test for prostate cancer save lives? New data reverse gold-standard findings

Health-evidence reviewers reverse recommendation on a blood test that detects a biomarker of a common cancer after decades of controversy.

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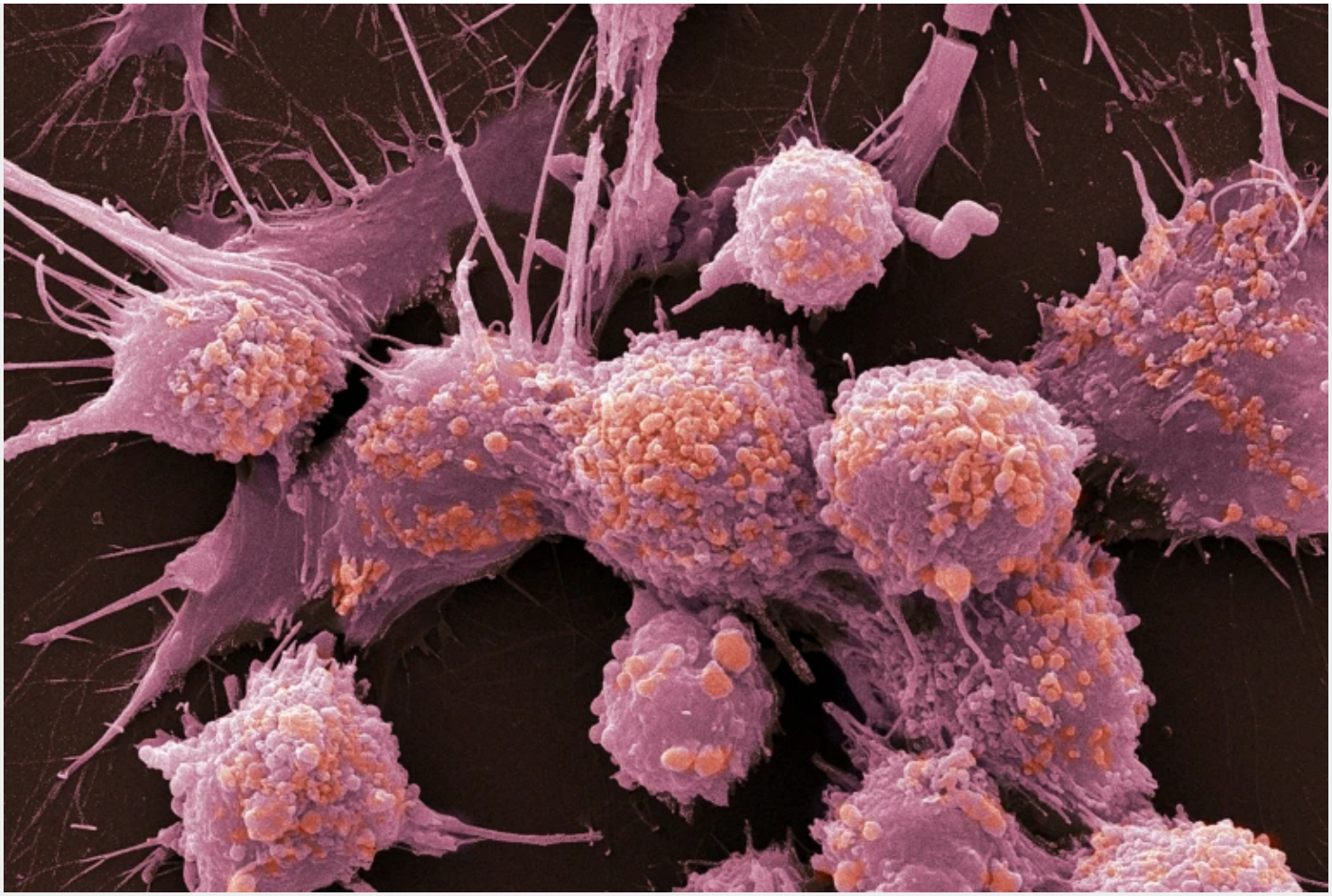

Prostate cancer (cells, artificially coloured) affected 1.5 million people worldwide in 2022. Credit: Dr Gopal Murti/Science Photo Library

Does prostate-cancer screening with the common 'PSA' blood test save lives? The Cochrane, an influential group renowned for its gold-standard medical reviews, has previously addressed that question twice, and twice the answer was 'no'.

Now, data from nearly 800,000 people has prompted a U-turn. A Cochrane review published today[1] suggests that testing for prostate-specific antigen (PSA) "likely reduces the risk of dying" from prostate cancer — and without increasing the likelihood of negative side effects caused by prostate biopsies or prostate cancer treatment.

The number of lives saved is small, the group found, but the latest finding still marks a

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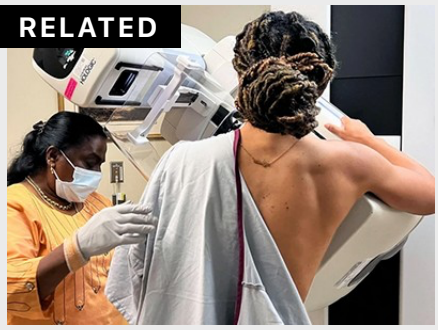

Early-onset cancer fuels calls for wider screening — but at what cost?

reversal of Cochrane reviews published in 2006[2] and 2013[3]. The authors of the most recent version say that that their findings were driven in part by data from two new trials[4,5] encompassing more than 250,000 people and from extra years of data from four older trials.

The report comes as several policy bodies around the world are reviewing guidelines for medics on the use of PSA testing.

"This finding is a milestone. I think it will make a difference for a lot of policymakers," says Philipp Dahm, a urologist at the University of Minnesota in Minneapolis and corresponding author of the review.

Common cancer

In the 1980s, scientists discovered that a blood test for PSA, a protein produced by the prostate, could detect prostate cancer. Prostate cancer is one of the most common types of cancers in men, affecting 1.5 million worldwide in 2022. Most men diagnosed with prostate cancer do not die from the disease. (This article uses the word 'men' to reflect wording in cited studies and reports.)

The introduction of a blood test made screening for prostate cancer more common, and the number of recorded cases skyrocketed. But the test can flag people with very slow-growing tumours or those with prostates that are enlarged but cancer-free. Such results raise the possibility that people who test positive but do not have life-threatening cancer will undergo invasive biopsies and treatment, leaving some scientists uncertain about the wider benefits of testing.

In the 1990s, scientists in the United States and Europe launched huge, randomized

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trials to try to gain clarity, only to be left more confused. The US trial, called the Prostate, Lung, Colorectal and Ovarian Cancer Screening Trial (PLCO), followed participants for 7–10 years and found no significant difference in death rates between those screened with the PSA test and those who were not tested[6]. By contrast, the European trial, called the European Randomized Study of Screening for Prostate Cancer (ERSPC)[7], followed participants for 9 years and found that screening reduced the rate of prostate cancer death by 20%.

Policies on screening for PSA around the world are also a mixed bag. Medical groups in the United States, for example, do not agree on the age at which testing should begin or whether testing should be routinely offered. The UK's National Institute of Clinical Excellence, which sets recommendations for doctors nationwide, does not recommend routine testing for those without symptoms, but tests are often available upon request.

A 2006 Cochrane review[3] of the PLCO and ERSPC studies and others found no evidence to support the measure. An update in 2013, which incorporated data from three additional studies as well as the earlier two, concluded that screening helped to detect more prostate cancer but did not reduce deaths from the disease.

About-face

But the new review finds that for every 1,000 men screened, PSA testing probably picks up 36 cases of prostate cancer and saves the lives of two men. Testing makes "little to no difference" to the number of men experiencing serious, harmful and unwanted events from biopsy or prostate cancer treatment, the report adds.

“For the first time, we are saying in a fairly authoritative way that prostate cancer screening does reduce prostate cancer mortality,” says Dahm.

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The U-turn comes after researchers published the results of two new trials, one in the United Kingdom and one in Finland, encompassing more than 250,000 men. (Reviewers excluded one of the studies included in the 2013 review because the randomization of participants did not meet updated criteria on which studies make the cut). And the PLCO and ERSPC trials, plus two more, reported fresh data after following participants for longer, with some tracked now for 23 years.

Dahm says that it takes a long period of time to realize the benefit of testing. For this reason, policymakers are likely to focus on screening men who have many years of healthy life ahead.

Researchers’ reactions varied.

“The quality of this study and its conclusions appear robust,” Lennard Lee, a clinical scientist at the University of Oxford, UK, said in comments to the Science Media Centre (SMC) in London.

But Adam Brentnall, a biostatistician at Queen Mary, University of London, said in comments to the SMC that there are limitations to the analysis. As a result, the report might downplay the true benefits of screening and also underestimate overdiagnoses in men over the age of 70, Bretnall said.

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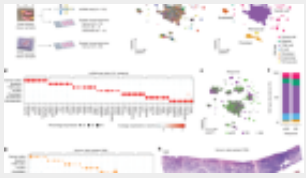

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