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How a sponge and a piece of string could help prevent oesophageal cancer

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Researchers from the Medical Research Council (MRC) have developed a new test, called the 'Cytosponge', which can diagnose a disease known as Barrett's oesophagus. By catching this pre-cancerous condition early it may be possible to prevent a type of cancer of the oesophagus, the sixth most common cause of death from cancer in the UK.

The team, led by Dr Rebecca Fitzgerald at the MRC Cancer Cell Unit in Cambridge, has proven that the Cytosponge provides an accurate and less uncomfortable method of diagnosis. MRC researchers hope it could become the first screening option administered by nurses in a GP clinic. The current method of diagnosis, endoscopy, normally requires attending hospital and sedation.

In the study, published today in the *British Medical Journal*, the patients were diagnosed by swallowing a capsule with a string attached and taking a drink of water. The device then dissolved in the stomach to expand into a sponge-like mesh 3cm wide. Five minutes later, the expanded Cytosponge was removed through the mouth by pulling on the string, collecting cells for analysis *en route*. These cells were stained with a molecular marker or flag which allowed the researchers to identify Barrett's cells, if present, under the microscope.

Barrett's oesophagus is an alteration of the oesophageal tissue and can occur in people who have had heartburn over a considerable period of time. It is the main risk factor for oesophageal cancer. In the UK at least 375,000 people are estimated to develop Barrett's oesophagus each year. Ten per cent of these patients will then go on to develop oesophageal cancer. Unfortunately, once cancer is diagnosed, there is only a one in ten chance of survival after five years.

The study assessed 500 patients aged between 50 and 70. The researchers tested whether the device gave an accurate diagnosis and could be used by patients as a practical screening method. Virtually all patients (99 per cent) were able to swallow the device without a problem. The test uncovered that 3 per cent had Barrett's oesophagus.

Dr Rebecca Fitzgerald from the MRC Cancer Cell Unit is thrilled by the results:

"The UK has the highest level of this form of oesophageal cancer in Europe and cases in the Western world have risen rapidly over the past twenty years. As oesophageal cancer carries such a bleak prognosis for patients, it has become more and more obvious that a safe, minimally invasive and easily administered method of diagnosis for Barrett's oesophagus is urgently needed.

We developed the Cytosponge coupled with a molecular test at the MRC Cancer Cell Unit as a direct response to this challenge. We are delighted that this trial has shown that patients find this method acceptable and it is a practical screening option. We look forward to undertaking further studies and establishing this as the recommended screening method for patients."

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This work was also supported by funding from Medical Research Council Technology (MRCT), an exclusive agent of the MRC that helps to translate cutting edge scientific discoveries into commercial products. Driving discoveries made by MRC-funded researchers into new and better treatments for patients is a crucial part of the MRC's five year strategy.

Oesophageal cancer screening has been identified as a key priority in the [Chief Medical Officer's 2007 Annual Report](#) and a larger scale, multi-centre trial has been awarded funding to follow-up these findings.

Ends

To arrange an interview with Dr Fitzgerald or for more information contact the MRC Press office on 0207 6376011 or pressoffice.headoffice@mrc.ac.uk

Notes to editors

1. For almost 100 years the Medical Research Council has improved the health of people in the UK and around the world by supporting the highest quality science. The MRC invests in world-class scientists. It has produced 29 Nobel Prize winners and sustains a flourishing environment for internationally recognised research. The MRC focuses on making an impact and provides the financial muscle and scientific expertise behind medical breakthroughs, including one of the first antibiotics penicillin, the structure of DNA and the lethal link between smoking and cancer. Today MRC funded scientists tackle research into the major health challenges of the 21st century. www.mrc.ac.uk

2. MRC Technology is the exclusive commercialisation agent for the UK Medical Research Council, working to translate cutting edge scientific discoveries into commercial products. It is now the most successful academic healthcare technology transfer organization in the world (AUTM Licensing survey 2007). MRC Technology bridges the gap between innovative basic science and making medicine. MRC Technology works to provide drug-like candidate molecules to innovative new drug targets, and to translate innovative antibody-based drug targets into potent and selective therapeutic antibody candidates giving pharmaceutical and biotechnology companies new starting points for drug discovery and development, based on MRC advances in science. www.mrc technology.org

3. This work was supported by MRCT via an award from the Development Gap Fund, as well as the Medical Research Council. MRCT's Development Gap Fund is 'pre-seed' money, operating at the earliest possible stage of technology transfer. It is intended to strengthen new patent filings or to support the applications of patents from good, commercially interesting, ideas. The awards from this fund will be for projects that are governed by commercial rather than scientific potential, and so would not usually be funded by the MRC of academic grants. The projects will also be actively managed by MRC Technology to meet technical and commercial objectives.

