Investigating promising cervical cancer screening method

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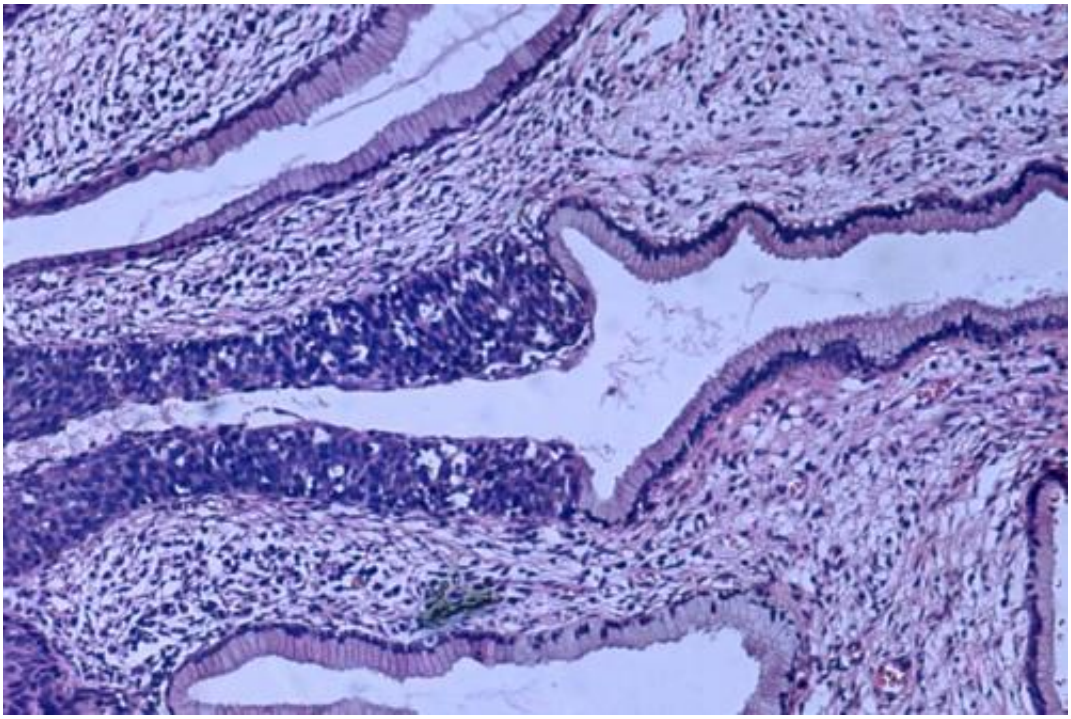

High grade dysplasia (carcinoma in situ) in the uterine cervix. The abnormal epithelium is extending into a mucus gland to the left of centre. This disease can progress to invasive cancer (squamous cell carcinoma) of the cervix. Credit: Haymanj/public domain

Since the mid-1940s, cervical screening in the form of Pap smears began to promise women the chance to detect cancer when in the early stages and prevent it. In the following decades, the focus shifted to the detection of human papillomavirus (HPV), a better biomarker to predict

cancer.

Cervical screening involves taking a sample of cells directly from the cervix which is examined by a skilled professional to look for signs of high-grade pre-invasive cervical lesions. Whilst this protects women under the age of 50 for three years and older women for five, it is arguably a subjective procedure where mistakes can be made; sometimes true cases slip through. There was a need for a better, more sensitive test that could prevent more cases of cancer and would lessen the need for frequent screening.

After decades of clinical trials globally, results revealed that HPV testing detects more high-grade cervical intra-epithelial neoplasia (CIN) compared to cytology, which otherwise if left untreated would progress to cervical cancer. In the early 2010s, the English national screening program decided to run a large pilot study across 6 NHS England labs, to test the feasibility of substituting cytology with HPV testing in routine health care.

A team of researchers from the School of Cancer & Pharmaceutical Sciences, led by Dr. Matejka Rebolj, Senior Epidemiologist, together with Mr Christopher Mathews, were invited to perform an epidemiological evaluation of the data and answer specific questions on how to implement this new test. The findings were published in collaboration with the rest of the pilot's steering group. The decision to introduce the HPV test was made by NHS England, UK National Screening Committee and Public Health England following the results of this evaluation.

"The pilot study really showed how powerful individual level data can be in improving public health and care for patients. Without this, for example, if we only had aggregated data, we would not have been able to do what we've done. It was because of this data collected by screening

health care providers that the best way to implement HPV screenings could be decided," said Dr. Matejka Rebolj, senior epidemiologist.

Dr. Rebolj and Mr Mathews are part of the King's Cancer Prevention Group, led by Professor Peter Sasieni, who as a team, have a long-standing track record of cervical screening evaluation and providing data and evidence of this sort to change the national screening program. Dr. Jo Waller recently joined this group from UCL, where she and her team also made a substantial contribution to the success of the HPV pilot study. The focus of their work was on women's psychological responses to the new screening test, which identified unmet information needs and ultimately helped improve the screening program's communication materials.

This new test has potential to provide more reassurance to women coming for their screenings as they will be better protected from cervical cancer for more years.

"More women tested for HPV will require a treatment for a high-grade pre-invasive cervical lesion, but this highly effective treatment is low risk and can be done in an outpatient clinic. The chance therefore to not need the label of a becoming a cancer patient is itself a huge benefit here for women," said Dr. Rebolj.

The main aim of developing and further integrating this alternative test is to reduce the occurrence of false-negative test results. However, whilst yielding many benefits, the method of taking the screening sample is still highly intrusive and inconvenient for women, with many not feeling comfortable to come to a clinic and take part, or unable to make the time for the appointment.

It is important to minimize these barriers and empower more women to get screened. The researchers note that even younger women who have

received their cervical cancer vaccine still need to continue to participate in screenings, as the vaccination does not protect against all types of HPV that cause cancer.

One way of overcoming some of the common barriers to uptake is to offer an 'at-home' test that can be self-administered and then sent off directly to the laboratory. This would hopefully remove a significant degree of anxiety and distress and encourage more women to participate in screenings.

Working with Public Health England (PHE), the team will begin a new national evaluation to see whether giving women a choice between booking a clinical test or ordering a self-sampling kit will affect uptake for the program, while making sure the program remains successful in preventing cervical cancer.

The findings from this body of work have heavily influenced and informed the implementation of a brand-new approach to screening, helping the UK National Screening Committee, PHE and NHS England choose which labs are most appropriate to carry out screening tests. From an operational standpoint, the screening interval of every three years for women under the age of 50 is going to be changed to every five years. Professional organizations in Europe are now also using this research to inform the internationally preferred approaches to cervical screening and subsequent diagnostic testing of women, showing the significant and international impact this work has had, and continues to have.

Provided by King's College London

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