Abstract \#999 Figure 1 ROC curves for logistic models including cg16767801 (in blue), or cg23642047 (in green) or both (in red) as predictors and all cases (A), cancer (B) or CIN3 (C, D) as outcome. Models were fitted on 1,000 training sets with 80% of the cases and 80% of the controls and performances were evaluated on a test set with the remaining 20% of participants. The pointwise average, 5th and 95th percentiles of the True and False Positive Rates and Area Under the Curve (AUC) are reported. Results presented in panels A, B and C were obtained using our study population (N=114 controls, N=73 CIN3 cases and N=54 cancer cases). An independent validation set (accession number GSE14375s, with N=54 controls and N=42 CIN3 cases) was used in panel D.

Disclosures This work was funded by NIHR and the Wellcome Trust. The authors have no conflicts of interest to declare.

03. Endometrial cancer

#196 ARTIFICIAL INTELLIGENCE-BASED MODEL FOR TRANSVAGINAL ULTRASOUND EARLY DETECTION OF ENDOMETRIAL ATYPICAL HYPERPLASIA AND ENDOMETRICAL CANCER IN WOMEN WITH POSTMENOPAUSAL BLEEDING

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Introduction/Background Postmenopausal vaginal bleeding (PMB) is usually the first manifestation of endometrial cancer (EC) and endometrial atypical hyperplasia (EAH). Transvaginal ultrasound (TVUS) is often the first diagnostic step for PMB. Although TVUS has a high sensitivity, specificity is low and a high rate of invasive biopsy procedures are performed, the majority of which are found negative on pathologic evaluation. This study developed an Artificial Intelligence (AI) model based on TVUS images to improve the accuracy of TVUS in EAH/EC early recognition in patients with PMB.

Methodology 300 patients with PMB were enrolled. All patients underwent TVUS and endometrial sampling within three months from TVUS. Manual segmentation of the endometrium on two static images for each patient was performed independently by two radiologists. Patients were classified into cohort A (EAH/EC) and cohort B (benign) based on the endometrial sampling report. A fully automated segmentation model (ASE) was developed. For the second phase, radiomic features were calculated from the regions-of-interest and individual feature analysis was evaluated. These features were also used to train a wide range of machine learning-based classifiers.

Results ASE-reader agreement shows similar performance to inter-reader agreement (ASE-Reader agreement: Dice similarity of 0.79±0.21). For the classification task, the deep learning model identified 92 features related to image texture and pixel intensity that were significantly different between cohort A and B. The top performing classifier model was a Support Vector Classifier using Minimum Redundancy Maximum Relevance feature selection. For the 3-fold evaluation, the AUC was 0.90 [0.88–0.92] for validation, and 0.88 [0.86–0.91] on the hold-out test set.

Conclusion We have trained an AI-based algorithm to differentiate EC/EAH from benign conditions based on TVUS images in a PMB population. Based on our preliminary results, we plan to expand this work in larger cohorts and evaluate the AI model in external datasets.

#434 ASSOCIATION BETWEEN ENDOMETRIOSIS AND ENDOMETRICAL CANCER: A REAL WORLD EVIDENCE STUDY

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Introduction/Background Endometriosis is a benign pathological condition characterized by the ectopic presence of endometrial tissue. Whether endometriosis predisposes the pathogenesis of endometrial cancer (EC) is still debated. This study uses realworld data (RWD) from the network of...