Introduction
Cervical cancer is a leading cause of cancer death among women in China. High-risk human papillomavirus (hrHPV) testing is the gold standard for cervical cancer screening, but it has limited specificity, leading to over-referral of women to colposcopy. DNA methylation markers are emerging as promising biomarkers for the triage of hrHPV-positive women. This study aims to evaluate the health economic impact of using DNA methylation markers for the triage of hrHPV-positive women in cervical cancer screening, based on a large-scale real-world dataset in China. The study will also explore approaches to reduce the usage of colposcopy.

Methods
The study enrolled 15,470 women and collected cervical cells to test for HPV and DNA methylation. The results showed that DNA methylation markers can identify CIN2+ and the study estimated the economic benefits of using this method.

Results
The study enrolled 15,470 women aged 30–60. The DNA methylation markers had a high sensitivity and negative predictive value for identifying CIN2+ cases, meaning that they were good at identifying women who did and did not have CIN2+. The cost-effectiveness analysis showed that incorporating PAX1-JAM3 methylation testing into the screening program could significantly reduce unnecessary colposcopies and increase the detection rate of CIN2+ at an acceptable cost.

Conclusion/Implications
The study found that PAX1-JAM3 methylation testing could significantly reduce unnecessary colposcopies and increase the detection rate of CIN2+ at an acceptable cost. These findings suggest that PAX1-JAM3 methylation testing is a promising new biomarker for the triage of hrHPV-positive women in cervical cancer screening in China.