

Is whole slide imaging (WSI) non-inferior to conventional light microscopy (CLM) in the assessment of specimens from the UK Bowel Cancer Screening Programme?

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Background

The diagnostic pathology workload in the UK is increasing in volume and complexity, and many departments are considering the adoption of digital pathology to accommodate for this. Screening specimens form a crucial part of the histopathology workload so pathologists need to be certain that converting from conventional light microscopy (CLM) to whole slide imaging (WSI) will not alter their interpretation of screening programme biopsies.

Aims

- * To assess intraobserver variation of bowel cancer screening programme biopsy diagnoses using CLM and WSI.
- * To compare the times taken for pathologists to reach a diagnosis and their diagnostic confidence.
- * To measure the variation in the assessment of size of adenomas.

Methods

Two gastrointestinal consultants and 2 trainee pathologists were recruited to diagnose 50 single case polyp slides chosen to include an array of pathologies from the bowel cancer screening programme. For 10 of these cases the pathologists were also required to measure the polyp length. Each pathologist viewed each case 4 times, twice using CLM and twice using WSI, with a minimum 10 day washout period between each viewing. Diagnostic data and confidence metrics were collected using a tick box pro forma.

Results

The 4 pathologists made a total of 800 diagnoses, with half the observations made on digital slides and half on glass slides. The intraobserver variation was assessed for each pathologist on both CLM and WSI using kappa values and percentage concordance rates. Results from consultants versus trainees were also compared. Variation in the time taken to reach a diagnosis, the diagnostic confidence of the pathologists and polyp measurements were analysed for CLM and WSI.

Conclusion

Whole slide imaging technology has the potential to transform the way in which screening programme diagnostics are reported. It is important that pathologists train appropriately in the use of digital pathology to ensure competent and confident diagnoses are made.