

# Sustainable innovation in cytology reducing carbon emissions: A diagnostic cytology laboratory experience of telediagnosis

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## Introduction

Diagnostic delays is one of the largest barriers to the provision of high-quality healthcare services in the NHS (1). Pathologists' workload, the complexity of their work and vacancy rates are increasing. In the next 5 years workforce modelling predicts a further 30% reduction in available Consultant Histopathologists, negatively impacting patients and services (2).

Cytopathology is a speciality under extreme pressure with workforce recruitment. Our aim is to share our experience of telepathology to maintain turnaround times while avoiding transport of physical slides for reporting and its associated increase in carbon emissions.

## Results - PEOPLE

- Remote working eliminates the need to travel
- Consultant expertise maintained within the service
- Improves retention of experienced staff
- Real time interaction between scientific and Consultant workforce enhances training and education



## Results - TECHNOLOGY

- Utilising existing equipment improved our use of existing resources
- Reduced carbon emissions as glass slides are not transported for reporting



## Methods

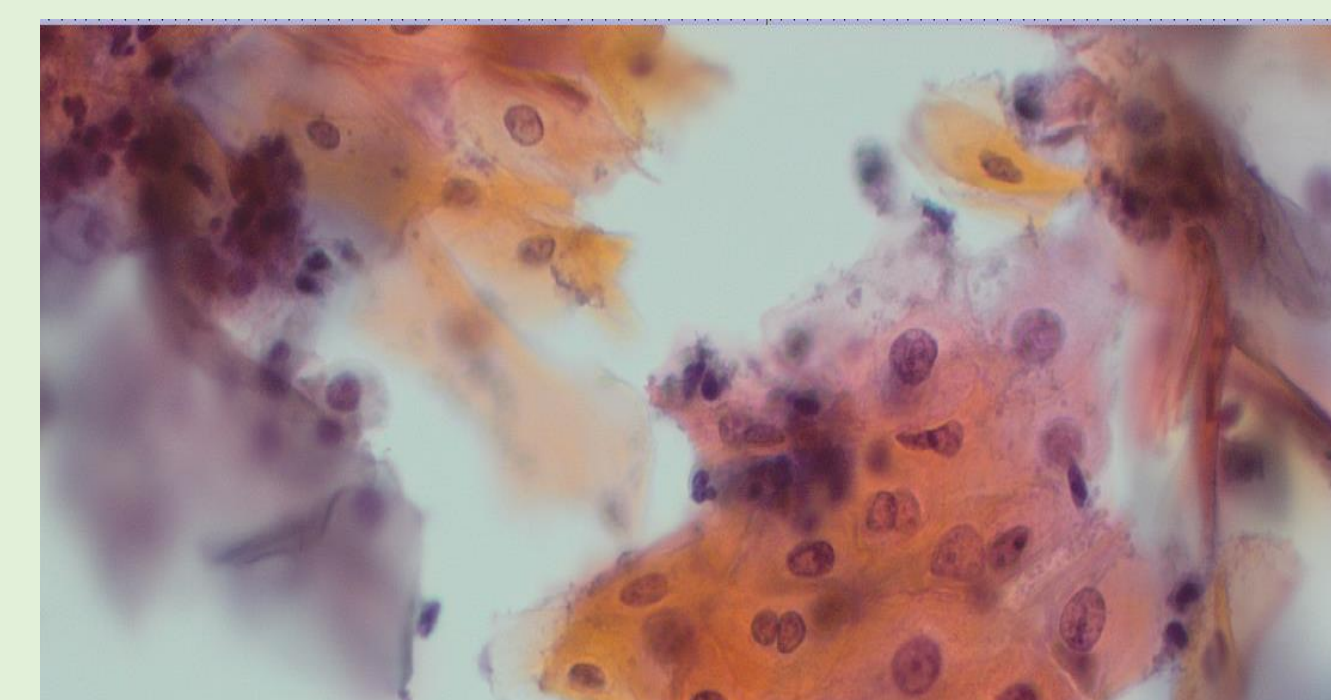
Since June 2024 we have been practicing telediagnosis using MS team's platform for a subspecialist area of vulvovaginal cervical cytology. This is an area of practice limited to a small number of Consultant Cytopathologists.

To maintain the expertise and quality standards in our work we commenced telepathology for these cytology cases. Unlike histopathology, digitisation of cytology is not approved for all slide scanners available on the market.

We performed a review of the implementation of telediagnosis on vulvovaginal cytology samples using People, Process, and Technology framework. In excess of 21 patient samples from June 2024 to April 2025 were telepathology reported and considered in the review.

## Results - PROCESS

- Reduced risk of logistical error that can be associated with sending glass slides off site for reporting
- Slide immediately available for remote reporting
- Improved workflow and workload management
- 67% of cases reported on the same day and 100% in 48hrs
- Eliminate waste that occurs with sending cases externally for reporting



## CONCLUSION

Telecytopathology can be effectively incorporated into cytology workflow processes. It helps pathology organisations achieve net zero, by reducing waste, reducing transport and travel, providing a sustainable method of diagnostic reporting.

By using existing technology and equipment cytopathology services can improve their use of existing resources while reducing carbon emissions and sustainably delivering laboratory diagnostics to continuously improve healthcare outcomes.

### References:

1. Diagnostics: A major priority for the NHS. Future Healthcare Journal. 2022.
2. RCPATH Workforce Census (2021-2024) for consultants (medical and scientific) aged over 55. Royal College of Pathologists. 2024.

Keywords: telediagnosis; telecytology; sustainable; carbon emissions