00145   Evaluation of LEICA Aperio AT2 Digital Pathology Scanner for Cytology Smears

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Aims: To evaluate the feasibility of using digital pathology scanner - LEICA Aperio AT2 in cytology laboratory to produce good quality whole slide images (WSI) for routine purposes.

Methodology: A total of 500 cytology smears were scanned independently overnight from 16 November to 5 December 2017. 151 were gynaecology smears - 113 were SurePath and 38 were ThinPrep smears. The remaining 349 were non-gynaecology smears - 115 cytospin preparation, 194 pull preparation and 40 SurePath smears. The measurements of system features, which were of average digital file size, scanning speed and quality of images were tabulated and analysed based on multi-layered scanning with 1 μm thickness per layer.

Result: For non-gynaecology smears, the average digital file size was 9GB for pull smears, 0.3GB for cytospin smears and 1.5GB for SurePath smears. 90% of the SurePath smears were successfully scanned in the first scan. This was followed by 88% for pull smears and 74% for cytospin smears. The scanning speed was measured at 7 mins for SurePath, 20 mins for pull preparation and 3 mins for cytospin smears. For gynaecology smears, the average digital file size was 3.5GB for ThinPrep smears and 1.5GB for SurePath smears. 87% of the SurePath smears and 55% ThinPrep smears were scanned successfully in first scan. The quality of WSI for both gynaecology and non-gynaecology preparations were comparable with conventional light microscopy.

Conclusion: From the study, we note that the system was unable to independently scan smears successfully in first run for poorly stained smears and smears where the cells of interest were widely dispersed with plenty of wide spaces in between them. Manual rescanning and adjustment of scanner's lens were required. Overall, we conclude that the scanner is user-friendly and able to produce quality WSI with multi-layered features for cytological examination. The system is better at scanning SurePath smears.