Expert Perspectives

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Implementation of digital histopathology at North West Anglia NHS Foundation Trust

North West Anglia NHS Foundation Trust and Philips had agreed to implement digital histopathology as a process and a method for reporting of pathology cases in February 2020. In March 2020, the COVID-19 pandemic hit the UK and made working from home part of the daily life of many healthcare professionals, including those in the pathology department. Dr. David Bailey talks about the journey to digital histopathology, and what digital pathology and the ability to work remotely have meant for his team.

"I'm a 30-year veteran of reading glass microscope slides on a microscope, and I could never have imagined in 2015 that I would ever find digital pathology as useful as glass microscopy. Now that we have it, I believe the image quality and functionality represent major improvements, and that we sometimes see things on digital that we don't necessarily pick up on glass. I would not want to go back to glass slide reporting alone," says Dr. Bailey.

The need for digital pathology

Research suggests that efficiency savings of 10% could be achieved by implementing digital pathology, but Dr. Bailey saw the opportunity for increased quality of reporting as an equally important driver.

The move to digital histopathology for Peterborough hospital was not always a given. After prior initial skepticism, by 2017 Dr. Bailey felt that the quality of the Philips digital histopathology solution had improved dramatically, and that more and more departments were beginning to look at the options to determine whether they could be useful in their daily practice.

At Peterborough, the department's six consultant pathologists report on approximately 32,000 surgical pathology specimens each year, a workload that is only likely to increase with consolidation of sites within the NHS. The switch to digital has helped the department attract and retain high-quality consultant pathologists, several of whom view the switch to digital so positively that they say they would not consider working in a department without it.

Building support within the institution

In 2018, time-limited funding to support the transition to digital became available from the regional Cancer Alliance. By that point, Dr. Bailey was convinced of the value of digital pathology, but also knew that the amount offered would not fully support the implementation of a complete system. A strong business case was needed in order to secure additional funds from within the Trust.

"It was very rapidly becoming clear that the whole country was moving towards digital pathology in the coming years and if we didn't use the Cancer Alliance's offer of assistance, we might not get another chance to have significant partial funding," he says.
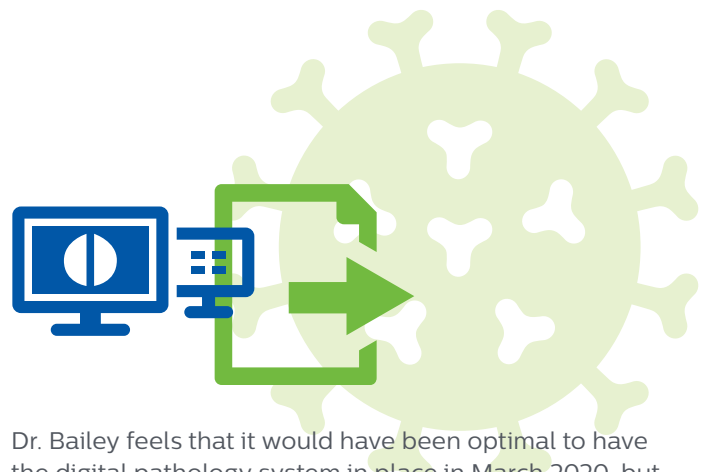
Dr Bailey advises that having advanced buy-in from all administrative decision-makers and stakeholders (which in this case includes Trust management and the Estates and IT departments, as well as the Trust's various financial committees) is crucial to a smooth process of acquisition.

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The day the world changed

The spread of COVID-19 in the spring of 2020 caused the cessation of routine clinical activity at the hospital, which meant that the cellular pathology workload dropped to just 25% of normal workload. Multidisciplinary team (MDT) meetings were remotely hosted and attended. Staff worked from home, autopsy workload increased, and pathologists staffed the medical examiner system to free clinicians to spend more time on hospital wards, to meet the increased demand for patient care.

Dr. Bailey feels that it would have been optimal to have the digital pathology system in place in March 2020, but that the slowdown in diagnostic work also gave the team time to focus on effective implementation of the newly acquired digital pathology system. In April 2020, the digital scanners were installed, and the existing Telepath and specimen tracking systems could start to be interoperable with the Image Management System, which is a subsystem of the Philips IntelliSite Pathology Solution.

Validation

Validation of the digital system was based on best practice recommendations from the Royal College of Pathologists for implementing digital pathology. Dr. Bailey and his team modified the recommendations to suit local conditions, resulting in a comprehensive validation process.

Comprehensive validation process

When validation is complete, the goal is to have a system that is completely paperless and glassless, working entirely from the image management system. Currently the screening programs for breast, cervical and bowel cancer require compulsory glass slide review. With that exception, the team effectively started digitally scanning and reporting all other histopathology samples in September 2020.

Validation stages

Create digital validation handbook	Stage 1	Stage 2	Stage 3
Based on best practice recommendations from the Royal College of Pathologists	· Introductory mixed-specialty training set (25 cases) · Feedback meeting after 2-3 weeks	· Four specialty-specific sets of mixed biopsies. and resections (breast, colorectal, gynecology and urology) · One general training set including skin, head and neck, lymphoma and other systems not covered in the specialty training sets · Feedback meeting after 6-8 weeks	· Glass slides and request forms move through the lab as usual for a three-month validation period, while cases are reported using digital pathology with the glass slides available for immediate review where required · Ongoing audit of cases · Review meeting after 3 months

Benefits of digital histopathology

Dr. Bailey and his team have found the following benefits to digital histopathology.

Speed	Collaboration	Flexible access	Quality
Greater efficiency of review for · Measurements · Small samples · Resections · Parallel views with levels and immunostains	· Easy to use for consultation (internal and external to the department) · Supports live consultations	· Access from anywhere · Enables remote MDTs	· Large field of view, enhanced image quality, additional safety measures (such as hot spot maps that show areas reviewed) · Future-ready workstations include 32'' 8k monitors for optimal resolution, contrast and detail

The new reality of working off-site

Digital pathology can be undertaken from a pathologist's home via remote VPN access to the Trust network, or via an external server. MDT case presentation is also able to be undertaken remotely.

The future

Dr. Bailey foresees artificial intelligence (AI) playing a role in the future of digital pathology, with the potential for algorithms to pre-screen cases and performing counting tasks (such as for proliferation markers and molecular scoring, e.g. PD-L1 and other cancer-related markers).

A worthwhile investment

The importance of engaging all decision-makers and stakeholders from the beginning is hard to overstate, because digital pathology is a significant investment that also requires re-evaluating all aspects of workflow. Dr. Bailey also suggests having a business case ready to go, in case funding appears unexpectedly to support the move to digital pathology.

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Digital pathology is allowing for more efficient workflow, even remotely.

For more information about digital pathology visit
www.philips.com/digitalpathology

Results from case studies are not predictive of results in other cases. Results in other cases may vary.

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