Source LDPath

Access the Future of Pathology From Anywhere

Your Guiding Hand in Digital Pathology and AI Implementation

Digital pathology

Artificial Intelligence

Streamlined, modular workflow

MDMs, Second opinions and audit support

The transition to digital pathology is happening: How are you going digital?

Sanj Lallie of Source LDPath looks at the benefits of transitioning to a digital pathology workflow and charts a vision of a virtual histopathology department for every NHS trust.

Pathology departments across the UK are in a state of operational emergency. While the NHS workforce continues to grow, the demand for services continues to expand – with an emphasis on diagnostic testing. The COVID-19 pandemic, along with a multitude of challenges pathology departments currently face on a day-to-day basis surrounding case overload and staffing shortages, has positioned substantial strain on laboratory reporting and subsequently the delivery of patient care. Uncertainties generated from the COVID-19 pandemic surrounding elective treatment administration and pathology-based interventions make it challenging to accurately predict how quickly, and on what operational basis, UK hospitals will be able to recover the facilitation of these services. With this said, it is not difficult to conclude that the most influential factor in creating such change is to address the rising case numbers for pathology reporting, and then work to operationally meet this capacity.

Digital technology presents a platform for clinical workforces to address this change, allowing pathology departments to deliver services that are more streamlined; increasing the efficiency of case reporting and closing the gap between case formulation and the delivery of treatment. The opportunity for pathology services to turn to a complete digital workflow, providing end-to-end digital solutions for a faster and more effective case turnaround, brings benefits that will advance the practice of pathology across hospitals worldwide.

UK pathology diagnostic services

A study conducted by Keele University stated that demand for histopathology laboratory services increases by 4.5% every year. In addition to this ever-growing rise, the COVID-19 pandemic demonstrated its role in continuing to impair the delivery of non-COVID health services, such as cancer diagnostics. During the UK's navigation of the recent pandemic, not only did the focus of healthcare delivery shift to COVID-orientated health issues, but many elective procedures were cancelled due to secondary influences such as isolation periods. As a result, an immense backlog of pathology cases awaiting referral, slide imaging, evaluation, reporting and therapeutic decision making is now overshadowing laboratories performing routine diagnostics across the UK.

In addition to the challenges arisen secondary to the pandemic, the NHS declared a national shortage of pathologists in 2018. This declaration comes from an array of measures surrounding both the laboratory processing and the administrative practice upholding the reporting and subsequently the treatment of patients. For instance, in an industry where the career path to becoming a senior healthcare professional is extensive, many laboratory staff are too junior to perform even primary duties, such as clinical dissection.

With several workforces operating at minimum capacity, trusts have encountered large-scale issues in maintaining a workflow stable enough to keep up with the ever-growing rise in pathology cases submitted for clinical diagnosis. Where staffing levels are inadequate to cope with pathology case volumes, there is an overwhelming need for innovative strategies to manage both short-term and long-term pathology case accumulation. In a period of momentous technical advancement and scientific innovation, we have the chance to radically rethink the way that services such as routine diagnostics are delivered; a reformation which will enable experts to grasp control of patient reporting measures and maintain regulated management over patient care. In achieving this medical transformation, the integration of digital pathology services will be critical for both service providers and NHS trusts.

Integrating a digital pathology workflow

Routine diagnostics, specifically cancer diagnostics, historically relied on traditional methodological practices, using microscopic optics to capture and evaluate histological images. With technical advancements driving the discipline of clinical diagnostics into a state of virtual efficacy, digital scanning of whole-slide images accompanied with AI technology has paved the way for a

more efficient and in many cases, more accurate, diagnostic workflow; ultimately projecting a better delivery of cancer diagnostic services.

Digital images of slides can be captured instantly and distributed to pathologists at any hospital, and to any location. The ability for pathologists to view and cross-evaluate patient slides digitally will reduce pathology reporting times exponentially by removing the need for the physical transport of patient slides via courier personnel. Not only does digital imaging eliminate logistical challenges, but the cost associated with the physical transportation of patient slides is also entirely dismissed, providing trusts with a clear generation of revenue by remote analysis. The ability to transport slide images electronically, and therefore load-balance work across the UK, provides a ready solution to the current unprecedented work volumes experienced in many pathology departments. This allows healthcare professionals to carry out anything from a second opinion check to a group multi-disciplinary meeting with ease.

While the digital capture of slide images for cross-evaluation has proven to be invaluable in reducing pathology reporting times, the integration of AI to promote diagnostic accuracy brings benefits to a multitude of logistical and medical measures associated with the diagnostic process. The use of AI in aiding diagnostic decision-making also allows for a faster retrieval of final case reports, particularly pivotal to complex cases needing additional consideration. Improvements made to diagnostic accuracy enables intricate cases to be analysed and reported faster, and with greater clinical confidence, giving such patients better treatment outcomes at accelerated rates.

Bringing this digital workflow to pathology practices in the UK, Source LDPath founded its digital pathology platform in 2014, with a vision of a virtual histopathology department for every NHS trust in the UK. In 2022, Source BioScience acquired LDPath to form a pioneering platform for nationwide hospital trusts to make the

Digital technology can enable pathology departments to deliver more streamlined services; make case reporting more efficient and close the gap between case formulation and treatment delivery.

transition to digital pathology. Together, Source LDPath is the largest and most technically advance private provider of cellular and digital pathology services in the UK. Offering digital reporting with innovative AI technology to enhance the diagnostic process, Source LDPath is exploiting the potential of digitalisation to promote diagnostic accuracy, accelerate pathology reporting turnaround times and reduce patient waiting times.

The hidden complexity of digital integration

While the transition to digital pathology may appear manageable at surface level, the challenges associated with integrating such capabilities into a formerly manual clinical practice are sophisticatedly hidden. Currently, only a handful of NHS trusts throughout the UK have successfully adopted digital reporting platforms due to the operational challenges faced prior to, during and after integration. The gap between perceived operational challenges and the seemingly unknown operational challenges, is the main

barrier for implementing digital pathology infrastructure into daily clinical practice across the UK.

For the complete and functional integration of digital services, many clinical and technical stakeholders are required to work in partnership. With collaborative input required from all key departmental groups, these being pathologists, IT specialists, laboratory managers and other healthcare professionals; the execution of a digitalised reporting workflow demands substantial resources. The digital infrastructure needed for a seamless transition must adopt adequate bandwidth and data storage available to download and store digital images and reports, allowing multiple users to access this database simultaneously. While these operational considerations for integrating digital processing into the practice of pathology can be somewhat difficult to overcome, NHS trusts will benefit from capitalising on a comprehensive integration system whereby each of these hurdles can be overcome collectively, without the need for independent consideration.

Furthermore, as the adoption of digital pathology spreads across hospital trusts across the UK, the role of the pathologist will inevitably change. Pathologists in practice will require training for digital reporting platforms and AI technology in the adjustment period from human evaluation to AI-driven slide analysis. While the transition to the digital workflow will alleviate stress on staffing numbers in the long run due to the reduction of laborious slide

With a core focus on introducing ground-breaking integration of digital pathology and AI, Source LDPath provides a comprehensive pathology platform to transform diagnostic processes, delivering faster reporting times and improving patient care

management and evaluation processes, obtaining the resources to employ this training to current practising pathologists will no doubt enhance staffing pressures in the short term.

Milestone digital integration with East Kent

In March 2022, Source LDPath launched a milestone digital pathology integration with East Kent Hospitals University NHS Foundation Trust (EKHUFT) as part of its ground-breaking approach and proprietary technology to transform diagnostics within the NHS. This was the first integration of its kind in the UK, bringing renowned histopathology expertise and rapid diagnoses to NHS patients whilst alleviating the pressures currently facing this NHS trust. The integration process between Source LDPath and EKHUFT involved connecting two secure systems and the implementation of a state-of-the-art digital slide scanner that converts traditional glass slides into high resolution, interactive digital slides relating to disease, including cancer. The integration of Source LDPath's market-leading laboratory information management system, with the NHS server secured data security using Cyber Essentials-approved API bridges. Consequently, Source LDPath is able to act as a bridge for NHS hospitals to evolve into digital service providers, resulting in significant cost savings and a modern, bespoke patient experience.

Wider adoption of these systems is expected to help with the immense backlogs seen across the rest of the country. With a complete modular solution for digital pathology services, from establishing an effective laboratory workflow to providing a complete data management and storage system, Source LDPath is wll establishing itself as a key contributor to the nationwide transition to digital pathology.

The power of turning digital

The significant impact of digital pathology on laboratory workflows, pathologists' workloads, turnaround times of patient diagnosis and patient care will revolutionise the healthcare system. The need for second
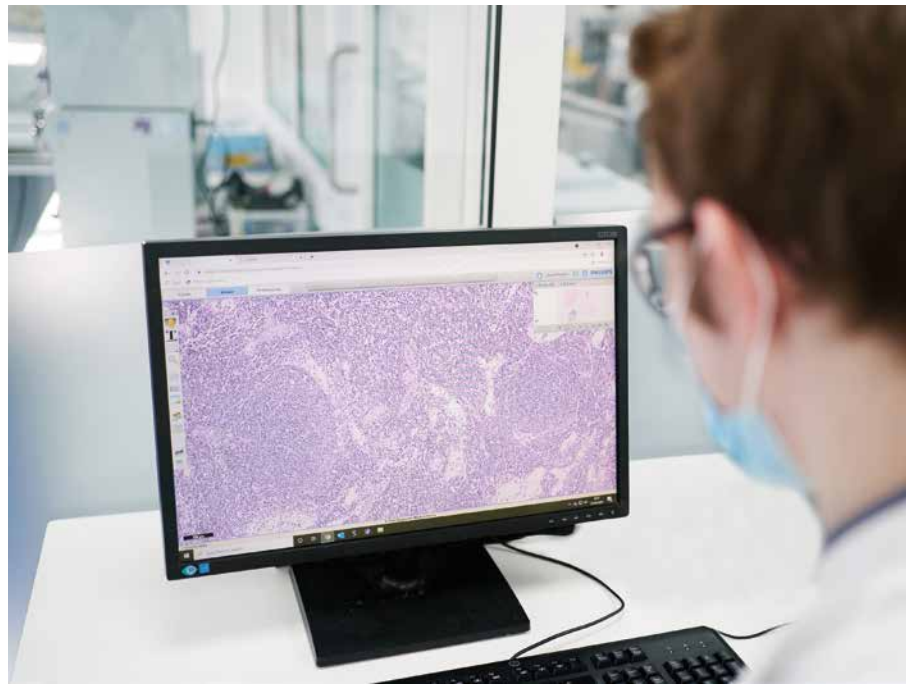
Digital images of slides can be captured instantly and distributed to pathologists at any hospital, and to any location, allowing healthcare professionals to carry out anything from a second opinion check to a group multi-disciplinary meeting, in a marginal timeframe.

opinions amongst pathologists is a monumental barrier in maintaining efficient reporting of specialist cases, whereby turnaround times can be long enough to considerably impact the patient's course of treatment and therefore overall care.

Since Source LDPath's digital integration model applied to EKHUFT laboratory operations in March 2022, 6,127 cases have been successfully reported as of October 2022, allowing the trust to almost completely clear the accumulated case submissions which had built up over the course of the pandemic. Cases have been reported at an average turnaround time of 3.16 days, allowing patients to obtain accurate and effective treatment plans for their diagnosis. With this said, there is scope for the trust to further improve these statistics surrounding case reporting time as the accumulation is eradicated and the laboratory staff are working at a 'case in, case out' basis.

Viewing and transferring slides digitally, anywhere and at any time, enables the rapid referral of such

cases between organisations and pathologist networks; reducing patient waiting times for diagnosis exponentially. The use of AI in case reporting allows for increased diagnostic accuracy, whereby specialist case reports can be generated rapidly and with improved evaluation capabilities. This means that not only will patients receive faster service, but potentially better outcomes. Source LDPath is committed to improving the clinical pathway for pathology reporting, which ultimately will enable the UK and beyond to better grasp control over clinical demand, therefore providing a tangible platform for enhancing patient care. A future whereby every NHS trust will adopt a virtual histopathology department will connect pathologists worldwide, enabling increased flexibility and efficiency of reporting and the pathologist workforce.

Sanj Lallie is Technology Development and Commercial Director of Digital Pathology at Source LDPath.

Source BioScience
1 Orchard Place
Nottingham Business Park
Nottingham
NG8 6PX
United Kingdom

T: +44 (0) 115 973 9012
E: enquiries@sourcebioscience.com
W: www.sourcebioscience.com

Source LDPath delivers an end-to-end pathology integration system for streamlined digitalisation, efficient workflow, local system interfacing, data storage and administrative support