Bologna DIAP improves patient care and saves money by streamlining anatomical pathology and integrating services across five hospitals

THE CUSTOMER

DIAP is a pathology consortium between the University of Bologna and all the health entities in the province of Bologna. These include – the Bologna and Imola health units (which incorporate three local hospitals) plus two large independent hospitals – one of which is S. Orsola University Hospital, the largest hospital in Italy with 1,535 beds. From the 10 disparate laboratories across five hospitals in 2012, to one central technician-preparation lab with remote clinicians delivering specialist diagnoses, the Bologna DIAP network of labs has made gigantic strides towards full digital interoperability of their anatomical pathology services.

THE CHALLENGE

Like most surgical pathology services, Bologna was faced with pockets of specialty expertise and much duplication of core effort across their multiple hospitals. The initial task was to consolidate the equipment supply chain for all of the labs and substantially reduce costs. Also, with qualified pathologist numbers declining nationally, the maximisation of specialist analysis time was viewed as critical. So in order to improve patient care and efficiency, a rationalisation of anatomical pathology processes and their locations was undertaken in 2016.

THE SOLUTION

From a full competitive tender in 2011, Dedalus Group was chosen to provide the Athena Laboratory Information System (LIS) to each of the five hospitals and their 10 labs. Initially every lab was implemented as a separate project with no single cohesive specification. However, with the establishment of DIAP – an intra-corporate department initially serving four of the five hospitals – the process review resulted in an agreement to standardise to one single LIS specification across all sites. The establishment of DIAP was the first of its kind in Italy. This organisational change was not a physical move but the production of a single cohesive unit to manage anatomical services across the region.

The final agreed stage in the process was to amalgamate all the technician-led, slide production procedures onto a single site in a large purpose-built lab currently under construction – and due to open in 2020. The plan is for all speciality clinicians to remain at their 'home' hospital carrying out remote diagnoses against their own specialty expertise.

THE RESULTS SO FAR

With substantial revenue being recouped by supply chain consolidation of equipment in the numerous labs, the first LIS cornerstone was the institution of electronic order entry for all specimens across all labs. The Dedalus web order entry solution takes electronic orders from the disparate systems across the network such as operating theatres, GPs or external clinics etc and identifies the patient, location, specimen and tests required

Customer Name	DIAP (Dipartimento Inter Aziendale di Anatomia Patologica) Combined Department of Anatomical Pathology
Location	Bologna, Italy
Organisation Type	Pathology consortium between the University of Bologna and all the 'health entities' in the province of Bologna
Population	Over 1 million
Number of Clinicians & Tests	45 Pathologists 100 Technicians 100K Histology & 100K Cytology cases per year
Solution Components	Athena LIS – for workflow management Halia – for lab systems integration X-Value – for cross-site interoperability Clipad – for workload control
Key Benefits	- Cost savings due to single supply chain sourcing of equipment - Electronic order entry connections to HIS and surgical theatres - Reduction in clinical errors & improved patient safety - Accurate specimen, procedure & results tracking - Optimised workload planning - Effective use of specialist clinicians with remote collaboration - Minimising impact of increasing skills shortage

– for accurate tracking and reporting. The move from paper to 100% digital requests will be complete by the end of 2018.

Orders are entered at the hospital of origin and all specimens/biopsies are instantly barcoded for accurate identification and tracking. The specimens are then couriered to the relevant lab in formalin-free vacuum containers for minimum contamination where they are checked in against the orders already received electronically.

Electronic order entry and barcode tracking has dramatically reduced identification errors – which are now exceptionally rare. Barcoding is applied to all objects in the slide preparation process and from the scan of even a single slide I can identify the patient and all their details.

Arrigo Bondi, Director of Anatomical Pathology, AUSL Bologna, Flagship site

The second milestone was the connectivity of the LIS to all incumbent lab systems to provide 100% tracked workflow of specimens, materials and tests in all labs – allowing a much tighter management overview and control of processes. Facilitated by Halia Middleware, the connections include: block and slide printers, line printers, electron microscopes, barcode label printers, HPV devices, analysers, macro and micro cameras and more. In AUSL Bologna, which is the flagship lab, 100% of systems are now integrated and there's currently an 80% roll out across the rest of the sites.

The foundation work was concluded with introduction of the management, storage and archiving of biological samples, blocks, slides, etc. currently c.50% completed in AUSL with roll out continuing across the other sites.

With the establishment of DIAP in 2016 the focus changed. Whereas originally there were 10 labs with 10 LIS, then 10 labs with the same LIS, it was now decided to concentrate core technician preparation work into a single central lab to focus staff and equipment resources and save money. The specialist pathologists would remain at their 'home' hospital and do remote diagnoses against their key speciality – breast, gynaecology, urology, etc. – which would not only shorten diagnosis time but increase accuracy. Whilst Athena is currently managing DIAP cross-site communications via its multi-lab facility, any connections to hospital systems outside of the labs is being managed by the X-Value interoperability platform.

While much discussion is being had about which part of the process happens locally and which centrally, it is anticipated that initially each site will retain a grossing lab and biocasettes will be transported to the central lab for processing and storage. The ultimate aim is not to move slides around but to establish full digital pathology with the sharing of 'full-slide' images. By 2021 DIAP plan to have completely moved to digital and have live diagnostic pathways for all specialties.

While digital pathology (i.e. scanners) is high profile, it is only part of the equation, the need for total workflow management and an interoperable network must not be underestimated. Overall information management is crucial.

Arrigo Bondi, Director of Anatomical Pathology, AUSL Bologna, Flagship site

NEXT STEPS

The solution embodies SNOMED, ICD9/10 coding and encompasses all the agreed reporting standards from the College of American Pathologists/ Italy/France, etc. However, the transition from slides to digital is a huge cultural hurdle for senior pathologists. Plus, the way in which each pathologist interprets digital images and the standardisation of stains etc. are much greater debates – currently raging internationally with Google now weighing-in. DIAP will be actively tracking these debates.

The establishment of the DIAP consortium and the split to speciality-based diagnosis rather than hospital-based tests has demanded a powerful workload management and clinical governance overview system to manage the complexities of the full network. Dedalus Clipad is a dashboard cockpit that can spot bottlenecks, manage performance and ensure workload efficiency. It has been installed but will not be fully implemented until the DIAP reorganisation is finalised.

Find out more at: **www.dedalus-uk.com**

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