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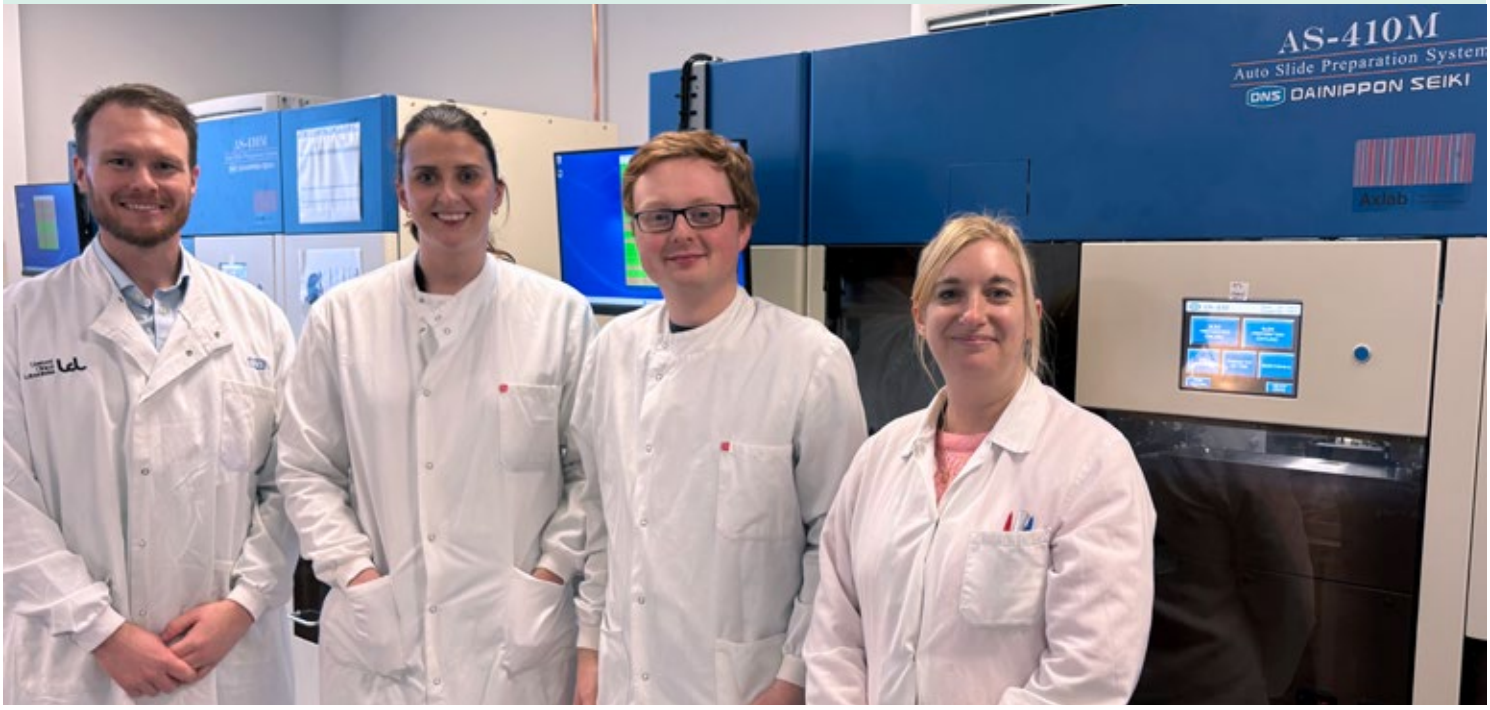
SECTION



No more overtime. Sick leave reduced from 9.5% to 4.9%. Backlog eliminated. Staff freed up to handle more complicated tasks instead of routine work. Initial skepticism among the staff has turned into a literal success story for Liverpool Clinical Laboratories (LCL) in England, both in terms of laboratory efficiency and employer health and satisfaction. From left: James Wingfield, Hannah Watson, Harry Holland, and Michelle Pritchard.

THE PROVEN POWER OF AUTOMATION:

How Liverpool Clinical Laboratories freed up staff and eliminated backlogs

The spring of 2024 marked a significant chapter in the history of LCL, when two advanced Japanese machines named AS-410M Auto Slide Preparation System were installed in the pathology lab. LCL had, up to this point, used standard microtomes for the precision cutting of paraffin embedded tissue (FFPE), sectioning up to 800 blocks manually every day. Even though the staff tried hard to keep up, also putting in overtime, they were always behind. A large portion of these blocks were now to be sectioned in the AS-410M devices.

James Wingfield, Directorate Manager – Cellular Pathology, explains: "We had quite a large number of staff on stress leave, and a large backlog in the lab. It's demoralising seeing a mountain of work every day that you just can't get through. It almost certainly contributed to staff sick leave. We also had several staff off work with various musculoskeletal issues, for instance from leaning over as well as from repetitive motion from the manual microtome." James Wingfield could see the potential in automated sectioning but to obtain the necessary financing, he had to put together a strong business case. "One of the key points in our business case was actually the staff burnout that we needed to improve."

A consistent part of the workflow at LPC is the "morning huddle" – here led by Michelle Pritchard (left). They help provide structure and reinforce process improvements, quality assurance, and team engagement and were particularly useful when implementing automated sectioning.

Reduced sick leave and improved capacity

James Wingfield's business case convinced the senior management of the benefits of automation and helped secure the needed financing to purchase two devices. By summer 2024 both were running at full capacity. "Automated sectioning has definitely allowed us to shorten the time that the staff spend at the microtome. Instead, they can focus on other tasks. Some of the musculoskeletal-related absences have also been reduced."

The end of the backlog

One thing, however, that caused the most frustration and stress and challenged diagnosis time was the dreaded backlog, often exceeding 3,000 blocks. The backlog is now a thing of the past. No backlog also means no need for overtime. Only two staff members work evening shifts. Their primary task is to feed the two AS-410M, much like a dishwasher. One cycle cuts up 96 paraffin blocks and can deliver up to 400 sections mounted on slides, registered, dried and ready for further analysis. Harry Holland, Associate Practitioner, is often the first to arrive in the morning. He immediately empties the trays, prepares a new batch and loads 192 blocks in the machines before anybody else even walks in. He is supplemented by Hannah Watson, Histology Laboratory Manager: "People enjoy working with it and we have seen some massive improvements. Having the AS-410M churn away, cutting through routine blocks is really helpful." Other benefits pointed out by the team in unison include a general improvement of the quality of the sections, thus reducing the need for recuts. Risks of cross-contamination and errors associated with manual handling have also been minimised.

Staff freed up to do more complex tasks

A turnaround time of 96 blocks in four hours was originally estimated in the business case but Harry Holland believes the number is closer to 192 because the staff can now focus on the next batch while the previous batch is processed in the AS-410M. This has allowed the staff a bolder and more creative approach. In his own words, Harry Holland likes to "push boundaries" – and with all the routine blocks now processed in the AS-410M, he feels that he can finally do just that: explore, push boundaries, and grow within his field. He is supported by Michelle Pritchard, Senior Biomedical Scientist: "Staff is now free to do the more complicated specimens such as the renal biopsies as well as the sentinel lymph nodes."

From fear to happiness

Harry Holland admits that he expected automated sectioning to be "a lot of work – it always looks so easy from up above in the [management] helicopter." James Wingfield nods in agreement: "I think most of the staff felt that it wouldn't be possible to generate sections of the same or better standard than what could be achieved with manual microtomes. Some even feared that they would be replaced and out of a job." No one has lost their job, but staff are happier now, and efficiency has also improved.

Today, around 50% of the blocks go through automated sectioning but James Wingfield believes that around 60% will be realistic in a year's time.

Implementing automated sectioning in the lab?

3 TIPS FROM LIVERPOOL CLINICAL LABORATORIES

1. **Ensure senior stakeholder commitment:** Include key senior management, also finance, from the beginning. Present a strong business case – not only histology benefits but also other gains. Should the opportunity arise for a bid, it will be easier to get a quick sign-off.
2. **Ensure lab staff engagement from the start:** Involve the staff every step of the way. When the machine arrives, invite everyone to come see "the elephant in the room". De-mystify it from the start as the device can be a bit intimidating.
3. **Be open-minded, flexible and prepared for change:** Don't try to just replicate your current workflow. Whether it's dissection practices, embedding practices, or something else: Be open to changing the way you work to fit it around the automation part.