Excelsior AS Tissue Processing and Efficient Workflow

University Hospital of Wales



In 2016, the Pathology Department at the University Hospital of Wales Cardiff processed almost 45,000 patient cases, providing a vital service in the diagnosis of cancers and other diseases. The success of such a high-throughput laboratory relies on optimised workflow and high-quality tissue processing. Their choice of tissue processor? The Excelsior™ AS from Epredia.

Profile

University Hospital of Wales in Cardiff first opened in 1971 and is part of the Cardiff University School of Medicine. Previously part of Cardiff & Vale NHS Trust, the hospital is now operated by the University Health Board and, as the largest hospital in Wales, serves a population of over 450,000. Lean workflow is a key part of their practice, helping them to maximise throughput and achieve the best possible turn-around times despite ever-challenging financial conditions.

Scott Gable is the Cellular Pathology Services Manager at UHW Cardiff, managing a team of 50 full time equivalent staff. In 2016, they processed almost 45,000 general surgical requests as well as over 15,000 speciality cases from paediatrics, neuropathy, foetal and post-mortem pathology. They are a regional neuro centre and provide a regional service for vital breast HER2 screening. Last year, those cases led to almost 149,000 H&E (Haematoxylin and Eosin) stains being carried out. This places more pressure on Scott and his team to work in the leanest possible way to maximise throughput and minimise waste.

Tissue Processing and Lean Workflow

UHW Cardiff has an excellent lean set-up for optimum laboratory throughput. This includes implementation of a triple-line processing path. Scott comments, “We’ve designed the laboratory around lean flow; we implemented three linear workflows and competitor teams. We want to move away from “urgent” samples to a “first in- first out” method. It’s common sense. If an urgent comes in, instantly you delay everything else.”



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For many years, UHW have used Excelsior ES tissue processors from Epredia on each of the three processing streams. The oldest processor, still in use, was installed in 2001. They appreciate the benefits of Excelsior and of being able to process in smaller “through the day” cycles. Speaking favourably of Excelsior, Scott comments, “Excelsior tissue processors let us use smaller batch sizes and quicker turnaround times. They also give us ease of maintenance; the easy reagent change does itself. There is nothing difficult, and there is very limited downtime.” When the time came to upgrade the ageing ES instruments, Scott had no hesitation in upgrading to the successor Excelsior AS processors, and this year they purchased five new Excelsior AS units which are now in the process of being swapped in.

Discussing the quality of the instruments and service, Scott advised, “We have replaced all of our tissue processors with the Excelsior AS, having had such good results using the Excelsior ES. Nothing has been too much trouble for the customer service team to sort out and we are looking forward to a continuing successful relationship with Epredia.” Commenting on the transition over to the new units, Scott said, “The transition to Excelsior AS was eventually forced, because one of the old units had broken and was too expensive to repair. However, we actually couldn’t have planned it better. We usually take our time in transitioning to new instruments, but the switch was actually seamless. We just got them straight in. They work very well.”

The Excelsior provides high quality tissue processing, with minimal user interaction. Rapid processing enables multiple runs per day; while Excelsior’s intelligent reagent management system monitors alcohol quality and rotates reagents only when needed. This has been proven to save up to 75% in reagent use[1] and associated costs. Furthermore the battery backup and remote monitoring give peace of mind, while downdraft ventilation and both potassium permanganate and charcoal filters provide vital protection from formalin and solvent vapours for maximum user protection.



The team in Cardiff operate very efficient through the day processing, carrying out multiple runs using the bank of Excelsior tissue processors. There is a team of staff on each of three workflow streams, moving from station to station, cutting and putting straight into cassettes. As soon as they complete a full rack of cassettes it will go onto the tissue processor. This is followed by embedding and then through to sectioning, primary staining and coverslipping. Each team sees a batch through to the finish, and this eliminates the situation of having huge batches of blocks all coming off in the morning. Scott comments, “The nice thing is that you also get that natural “competitive” situation but retain the high quality as we have the target re-cut rates. The ultimate aim is maximum productivity but with minimal re-work.”.

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Scott Gable, UHW Cardiff

External quality check on Excelsior AS

The Excelsior also offers a range of other benefits, including the dedicated Quality Reporting System (QRS). This is an independent, external and confidential quality reporting program offered by Epredia for use in conjunction with the Excelsior tissue processors. Participants receive quarterly reports on their processing quality and, where necessary recommendations to improve results. When processing tissue on the sample processor every day it is possible to miss a gradual drift in quality, whereas if someone else is analysing independently, there are comparison checks so any drift is recognised. Scott comments, “QRS is very beneficial. It’s nice that it gives us that consistency check externally which will help us when we think about our ISO validation and revalidation of equipment. You’ve got that consistent standard. It’s helpful, and we’re keen to continue.”



The Future in Cardiff

The team at Cardiff are now embarking on a cultural change, and after carrying out significant workload and capacity analyses they are now beginning to move towards their vision for an optimised, lean laboratory. Moving forwards, there are plans to expand to a 6-day week across all specialties to fit in with the increasing workload. Scott says, “The plan is that staff will be there when the work comes off the processor, ready to section and further progress the samples.” As part of their Lean practices, UHW also utilise process mapping, improvement boards and a suggestion box. This empowers the staff, allowing them to share their suggestions on how they can make improvements. The net result is a committed and positive team of staff and a very efficient laboratory workflow. The Excelsior tissue processors continue to play a vital role in that efficiency. Importantly, the improvements have also contributed to a significant reduction in turnaround times in recent years, from twenty days in 2013 to less than ten days last month. Scott explained the importance of ensuring that his team understands the key part that their work plays in helping patients and their diagnoses. As part of their role they will also attend MDT’s (Multi-disciplinary Team Meetings) and they frequently have guest speakers in to discuss important topics. Scott concluded, “There are patients at the end of this, people suffering with anxiety waiting for results. That is what is important.”

Reference:

1. *A breakdown of costs associated with routine tissue processors vs the Shandon™ Excelsior™ ES,* Submitted by: Becky DiLallo BS, HT(ASCP), Anatomic Pathology Manager Forum Health-Trumbull Memorial Hospital, Youngstown-Warren, OH, USA



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