The high demands—staffing shortages, increased workflow, budget reductions, emphasis to decrease errors in the laboratory, to name a few—are a sign of the times in today’s histotechnology department. Here, we explore some of the challenges and how to turn them into opportunities.

**Gross Room**

Even after 161 years since the first autopsy was performed the gross dissection process continues to need constant revision. Tissue section thickness and fixation remain a problem, for example. Devices and reagents exist today, however, that can aid in the gross dissection process and deliver quality sections for microscopic slide preparation.

As well, the invention of the tissue cassette initiated a “standardized” method for tissue section thickness; but, due to demands for more rapid tissue turnover, time, fixation and tissue processing continue to be problems. Gross dissection must be changed and revised to produce quality tissue sections for fixation and processing. The foundation of all tissue preparation is fixation, which hinders almost any assay or test on tissue specimen for patient diagnosis. With an increase in molecular testing being performed on tissue blocks, the assays will be affected. Immunohistochemistry assays also continue to be affected with poor fixation and tissue processing.

The dehydration phase of tissue processing needs to be addressed. Histotechnicians are taught that dehydration is the gradual removal of water, but what other chemical changes are going on that may affect the future results of the tissue specimen? What about the clearing and paraffin infiltration steps? Again, fixation and tissue processing are the critical processes that are
preserving the tissue structures, entities and proteins for antibody expressions and molecular determinations. The fixation of tissues, therefore, should be the same in all histopathology laboratories.

Automation
Prior to the 1980s the most common automated piece of equipment in the histopathology laboratory was the tissue processor. Later, heat, agitation, vacuum and pressure were added to the processing cycles. Automated slide stainers for the H&E stains, immunohistochemistry assays and special stains also were introduced.

Automation of the microtomy process evolved; previously manual coverslipping, microscopic slide labeling and embedding can now be performed by some form of automation. This trend has resulted in improved efficiency and proficiency.

Error Reduction
In general, errors in pathology have increased, including mislabeled blocks, slides, lost tissue specimens and the wrong blocks recut. Errors create more work, loss of confidence in staff and processes, legal involvement, loss of revenue in some cases, and increased TAT, not to mention the impact it has on patient care.

The creation and implementation of bar codes and tracking, fortunately, have provided resolutions to error reduction. Focusing on the problems and restructuring check systems also have helped reduce errors.

As well, deficiency reporting programs are included in many pathology information technology systems. Errors are reported and data tracked to assist in finding solutions to proactively solve error reduction. This trend has increased over the last several years possibly due to short staffing, more rapid TAT demands, omission of check systems, increased workloads and poor processes.

Turnaround Time
Patient care now demands better and more rapid TAT than ever before. The highly educated patient is the driving force behind his tissue specimen; once he is aware of specific technology that can aid in turning his tissue specimen around more rapidly, he will demand this type of service. After all, patients are more educated on what pathology is and how the process operates. The trend of “two weeks for a tissue biopsy to be prepared and diagnosed” is no longer accepted.

Since pathologists are required to deliver more rapid TAT in preparing a microscopic diagnosis, they’re exploring methods and techniques to deliver a pathology report quickly. Quality must be a part of this process. Additional data is being collected for quality assessment and management in pathology. The quality measures today extend further than just quality control; proficiency testing is vital.

Staffing
A serious shortage of histotechnicians still exists. Although community college-based programs are evolving or re-structuring their programs to allow for more students, the demand is not being fulfilled. Automation aids with the workforce, but the need for a histotechnician or histotechnologist for specific tasks is still lacking. Agencies such as the National Society for Histotechnology and American Society for Clinical Pathologists promote the field and different types of certifications. While the shortage remains, some labs have resorted to shift changes and staggered hours.

What’s Next?
So where is the field going? What is our direction, goals and roles? Trends must be evaluated and we must recognize that some unique challenges can become real opportunities for our profession.

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