A CLINICAL LOOK AT THE FUTURE OF PATHOLOGY

Rapid change has become a defining feature of pathology — but can this change power a new generation of laboratory software to shape the role of the clinical laboratory of the future?

In the not-so-distant future, pathology services are expected to deliver more diverse and flexible services, driven by innovations in technology and demand for more personalised medicine. This shift in the healthcare landscape is opening a vista of new opportunity. This is the time to embrace change and harness trends that will enable laboratories to deliver more connected and efficient care.

So, what must pathology services do to adapt to these challenges in climate where the pace of change is likely to accelerate?

Critical challenges will need to be addressed rapidly. InterSystems anticipates that, within the next five years, personalised medicine will be at the very heart of a pathologist’s work.

Supporting an aging population

As people live longer and survive diseases such as cancer, they will need support to manage living with chronic conditions. Many of the elderly population today are in robust health; however, they have undergone a procedure, but others are frail and not aging in good health. This places a number of pressures on the overall NHS service, but for pathology services it will mean more testing, and crucially more routine testing, which will constitute an ever-larger proportion of workload.

The increase in routine testing is likely to lead to even greater automation. The impact for laboratories will be that the “hub” in the hub-and-spoke model will become more like factories, with these laboratories handling high volumes of essential but routine tests such as blood counts and cholesterol monitoring. In regions with a larger population of older citizens, we would expect to see more connected “spoke” laboratories helping to manage demand across multiple primary and secondary care settings. If implemented successfully, a hub-and-spoke model with automation and electronic transfer of data is both faster and more secure.

Results in this model need to be delivered quickly to care points, automatically delivering results directly into the patient record. Customers (clinicians, hospitals, GPs etc.) will expect instant access to results via their Internet browser, as a matter of course, and appropriate security protocols. Therefore, new systems and technology will be crucial in harnessing the benefits of personal medicine.

Embracing PoCT

We are likely to see more point-of-care testing (PoCT) — not just in GP practices and in the home, but wherever and whenever it is optimal and affordable in the care pathways. Point-of-care testing is not a new technology, but new developments in this area are moving us beyond the notion of disease or performing genetic-level diagnoses of certain types of cancer, such as the BRAC gene. At the same time, prices for this kind of testing are decreasing, the science itself is still expensive, but it is now possible to map a human genome for as little as $1,000.

Advances will continue, and prices will continue to fall, so that delivering personalised medicine will become a far more common expectation of clinicians. This, in turn, will have a significant impact on traditional pathology services, and change the way laboratories test.

The science of genomics will force pathology units and laboratory services to install more advanced facilities, provide training in new skill sets, and recruit staff that have the knowledge and expertise to interpret and diagnose based on new results and information.

Personalised medicine will completely transform the scope of the pathology service and its potential benefit for healthcare services. Take, for example, a patient who has experienced a stroke. With a $1,000 investment to understand the patient’s genome, clinical pathologists can quickly and easily identify the best anticoagulant for a fire. This could cut the time the patient spends in hospital and improve the recovery period, while helping to identify the best protocol for rehabilitation in the community. The result is not just a better outcome and experience for the patient, but much-needed cost saving.

Clearly, there could be huge benefit to the NHS. However, the investment to create this capability optimises the need for a long-term view. Upfront costs for creating laboratories with this capability are important but substantial, and these are not the only challenges that personalised medicine creates for NHS pathology services.

Laboratories that use genetic sequencing technology must also consider a greater demand for the security of this highly personal patient data. Strict protocols are needed for handling the custody of samples. Laboratories will therefore face more rigid controls, more audits, and more questions about the use and management of genetic data. Furthermore, personalised medicine services will drive demand for clinical scientists with specialist training that is currently not met by the education ecosystem, exacerbating staff recruitment and retention issues.

REFERENCES


WILKINSON MARTIN
LABORATORY MANAGER AT INTERSYSTEMS

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