

Merging microbiology: that's the way to do it!

Restructuring and relocation of services are common threads in the tapestry that depicts 21st-century laboratory medicine. A recent exercise in the north-west of England demonstrates how these two great imposters can be achieved with the minimum of disruption to pathology services.

Restructuring in pathology is an important matter for many laboratories to consider as pressures such as funding, patient care needs, new developments and increasing demand are brought to bear on the service. Such restructuring can be localised to one discipline on a single hospital site, or may involve all disciplines, or even a group of hospitals. In all cases, careful planning is required to minimise disruption to the processing of patient samples, and to ensure that improvements are offered once restructuring is complete.

This challenge was faced recently by a group of hospitals in the north-west of

England during a multimillion pound budget merger of the pathology services at the Royal Oldham Hospital, North Manchester General Hospital (NMGH), Fairfield General Hospital (Bury) and Rochdale Infirmary/Birch Hill Hospital. All services, and in particular microbiology, required a smooth transition. The new hub laboratory was to be based on the Royal Oldham Hospital site, where all microbiology services would be centralised. In addition, there were to be essential services laboratories at NMGH and Fairfield General Hospital.

The microbiology management team, led by Maurice Sidorczuk (microbiology

services manager) and including Peter Taft (technical manager – quality/health & safety), Sheila Norris (technical manager – I, M&T) and Paul Loy (technical manager – training), opened the new microbiology laboratory on 21 February last year.

Excellent facilities

Housed in a new building, the facility for microbiology occupies over 1000 square metres of laboratory space, cold rooms, incubators, sample processing areas, offices, seminar rooms and rest facilities, and employs 78 qualified staff handling approximately 600,000 specimens per annum using over 800,000 agar plates of various types.

The ergonomic design and layout of the laboratory offers an excellent working environment with clear open planning. It boasts many of the latest developments in automation for polymerase chain reaction (PCR) and enzyme-linked immunosorbent assay (ELISA) testing, automated blood culture processing, urine analysis, anaerobic culture, staining, TB culture and Class 3 specimen handling. In addition, the design facilitates the rapid and efficient reporting of test results to clinicians.

With one of the largest catchment areas (extending from Rossendale in the north to Middleton in the south, and Saddleworth in the east to Bury in the west) covered by a single site, this laboratory's achievement is something of which all involved can be extremely proud.

One of the key challenges faced by

'With one of the largest catchment areas covered by a single site, this laboratory's achievement is something of which all involved can be extremely proud'



Bug Box Plus workstations installed in the new Pennine microbiology laboratory.

‘The largest installation of combined anaerobic and microaerophilic workstations in the UK was completed on schedule’

Maurice Sidorczuk and his team during the merger of four busy microbiology laboratories was the creation of a central system for anaerobic and microaerophilic microbiology at the new site, while maintaining the ability to continue this culture without interruption on the original sites. The new system needed to be able to handle over 116,000 anaerobic/campylobacter plates per annum.

Comprehensive support

Detailed discussions were held with Pro-Lab Diagnostics and Ruskin Technology to consider the best way forward in managing the challenge. The Ruskin brand was founded in 1993 and soon became established as one of the world’s leading suppliers and manufacturers of anaerobic and modified atmosphere workstations. Located in a purpose-built area of the Sony Technology Centre in South Wales, Ruskin Technology offers innovation, excellence, reliability and guaranteed performance for the culture and handling of anaerobic and microaerophilic bacteria.

Pro-Lab Diagnostics, with its extensive microbiological experience in developing, manufacturing and supplying a comprehensive range of *in vitro* diagnostic kits and reagents, formed a strategic alliance with Ruskin Technology in 2006 for the exclusive sales and marketing of the workstations across the UK. This special relationship between two established companies provided the foundation for the handling of all anaerobic and microaerophilic requirements in the new proposed laboratory site in Oldham.

‘The ergonomic design and layout of the laboratory offers an excellent working environment with clear open planning’



Final installation of the Ruskin Concept 1000.

Anaerobic conditions

Key to the planning of the requirements was a need to maintain anaerobic conditions on the original laboratory sites, while preparing facilities on the new site for the large influx of work that

would begin on 21 February 2007. In addition to accommodating the 100,000 anaerobic plates expected eventually, there was also a need to provide microaerophilic conditions for approximately 16,000 campylobacter

TABLE 1. THE CHALLENGE AND ACTION PLAN USED TO CREATE A CENTRAL SYSTEM FOR ANAEROBIC AND MICROAEROPHILIC MICROBIOLOGY AT THE NEW PENNINE LABORATORY SITE WHILE MAINTAINING THE ABILITY TO CONTINUE THIS CULTURE WITHOUT INTERRUPTION ON ORIGINAL SITES.

Stage	Challenge	Action and target date
1	Accommodate immediate need for microaerophilic conditions for up to 300 plates per week at the new site	Install two Ruskin Bug Box Plus workstations on 24 January 2007. Maximum capacity 560 plates
2	Maintain workstations on original sites. Accommodate need for anaerobic conditions for up to 600 plates at new site	Install temporary Ruskin Concept Plus workstation at the new site on 16 February 2007. Maximum site capacity now 1340 plates
3	Increase capacity at new site to 1200 plates per week	Install the second Ruskin Concept Plus workstation on 5 March 2007. Maximum site capacity now 2120 plates
4	Closure of NMGH site where an original Ruskin Concept Plus anaerobic workstation is being maintained	Remove temporary Concept Plus from new site. Decommission, relocate and re-install Ruskin Concept Plus workstation from NMGH to new site on 5 March 2007. Maximum capacity to remain at 2120 uninterrupted
5	Increase capacity at new site to the target of 3120 plates in anaerobic/microaerophilic conditions at any one time of incubation rotation	Install new Ruskin Concept 1000 workstation on 19 March 2007. Capacity now 2780 anaerobic plates, 560 campylobacter plates on incubation rotation. Site total 3120



Pennine microbiology staff receiving training in the laboratory.

plates. This was achieved by maintaining the original workstations at the existing sites while beginning the design, build and installation of new cabinets on the new Oldham site.

First, the requirement for the culture of campylobacters was addressed with the installation of two Bug Box Plus units operating with a campylobacter gas mix. These provided a maximum capacity of 560 plates at any one time, which was more than adequate and offered room for expansion of the workload. In addition, the Bug Box Plus units can be converted easily to provide anaerobic conditions, should the need arise.

Anaerobic culture presented a bigger challenge, not least because of the number of anaerobic plates being handled and also the location and gas supply required from a gas store some distance from the main laboratory. The latter points were handled to an excellent standard, paving a clear path for Pro-Lab Diagnostics and Ruskinn product specialists to plan the installation efficiently.

On target

All critical target dates were met (Table 1). The outcome of the exercise was the completion on schedule of the largest installation of combined anaerobic and

‘The Ruskinn brand was founded in 1993 and has become a world-leading supplier and manufacturer of anaerobic and modified atmosphere workstations’

microaerophilic workstations with the largest capacity in the UK, and involved six engineers, four product specialists and the dedication of Maurice and his team to achieving a strategic stage in the new extensive laboratory.

A second, more straightforward challenge was the automation of the various staining techniques carried out on a day-to-day basis. Having identified cryptosporidia and acid-fast bacilli staining as two high-throughput areas, the team selected the Poly Stainer automatic staining machine from Pro-Lab Diagnostics, and two units were installed to accommodate a workload of approximately 400 slides per week. These units have the capability of throughput expansion to 2000 slides per week using 10 separate programmable staining methods, if required.

Enormous effort

Pro-Lab Diagnostics and Ruskinn Technology are proud to be associated with the new Pennine microbiology laboratory. Although the challenges and achievements were a major undertaking for all concerned, they formed only a small part of the enormous effort provided by Maurice Sidorczuk and his team, for which they are to be congratulated.

P



The Poly Stainer from Pro-Lab Diagnostics.

‘Pro-Lab Diagnostics has extensive experience in developing, manufacturing and supplying a comprehensive range of *in vitro* diagnostic kits and reagents’

Further details on all anaerobic workstations and the Poly Stainer system detailed are available from Mark Reed, general manager, Pro-Lab Diagnostics. (email mreed@pro-lab.com) or on the company's website (www.pro-lab.com).