



**Testing times
ROCC
in
NHS Laboratories**

ROCC in NHS Laboratories

The thought of a hospital laboratory that processes human specimens may conjure up visions of the more ghoulish side of a modern waxworks museum. On the contrary, a modern hospital laboratory is an essential department providing a valuable diagnostic tool for hospital wards at the sharp end of medicine. Increasingly laboratory evidence is becoming the mainstay of speedy and effective diagnoses for the patient.

Time is the enemy of the laboratory. From the receipt of the specimen there can be many different clinical processes before an analysis can begin. Time may be critical to a diagnosis.

The Key to Greater Efficiency

Over the years technology has given a helping hand to speed up these processes with new materials, methods and microprocessor controlled analytical equipment. The administration and information retrieval elements and the collation of reports from the different disciplines for the single patient have, however, for the most part, been manual or only partly automated. It is developments in this area that now hold the key to further gains in efficiency and effectiveness.

Careful investigation shows that whilst all laboratories in principal operate in the same way, there are some quite fundamental differences in computing requirements between the various Pathology disciplines. Their needs vary in areas from simple administrative procedures through to the range of facilities required, the volume of throughput and even the physical location of laboratories to each other and the hospital.

It was in this environment that the Histology and Cytology departments of the Central Middlesex Hospital started investigations with a view to replacing their partly automated system which was based on a word processor. Whilst not professing to be computer experts, the staff had a clear understanding of their requirements and the facilities they required to run a busy laboratory processing nearly 27,000 specimens per year.

A system was needed that would fit current practices without modification and allow Cytology specimens received by 1600 hours and Histology specimens received by 1200 noon to be reported on in the same day. An allowance for expansion was also essential. Additionally, a 'follow-up' system for positive and abnormal results from cervical smears was required together with epidemiology checks.

ROCC System Chosen for Flexibility

With these objectives clear in their minds Tony Falcon, senior chief medical laboratory scientific officer at the Central Middlesex Hospital and Jim Wood a divisional supplies officer at the Brent Health Authority set about a thorough review of the available packaged computer systems. Whilst many of the systems provided most of the elements required, they appeared inflexible. It was for this reason that a ROCC system was chosen since this was specifically designed with a flexible operating system to allow for rapid implementation of a flexible application matched to the user's requirements. Commenting on the installation, Tony Falcon said: "We chose ROCC because they were the only company prepared to mould the system around our requirements. I am particularly impressed by the way the system has fitted into the established procedures here."

Hardware, however, always needs software to run as a complete system so after a study of the needs of both the Histology and Cytology laboratories, PHOENIX Interface Technology Ltd was chosen to supply the application software. PHOENIX Interface is an independent software house and videotex bureau, that like ROCC, specialises in providing site support to meet individual client needs.

Commenting on the contract Peter Evans of PHOENIX Interface said: "Whilst we understood what Central Middlesex Hospital wanted at a facility level, at a compute level they were really asking for a system that both met their individual requirements and would integrate with existing and proposed computer systems. All this allied to a cost effective system. In other words a customised system for the cost of a modified package in a very tight timescale. This request fitted perfectly with our Application Blueprint philosophy.

Customising for Individual Laboratories

The use of PHOENIX's own application philosophy means that the system can be customised to meet an individual laboratory's needs. Simple user interface programs are custom written and these access a pre-written kernel program, a broadly standard core software package that is referred to as an 'Application Blueprint'. The name of the blueprint used is LISTER (Laboratory Information Storage Enquiry and Retrieval) which means for the laboratory that the end result is a customised system that can be installed in days for the price of a modified package.

The LISTER system is an application blueprint for



LABORATORY MANAGER

Tony Falcon, senior chief medical laboratory scientific officer at the Central Middlesex Hospital's Histopathology laboratories seen working with the ROCC system. At a time when NHS resources are tightly stretched, the efficiency, speeding up test return times by 50 per cent. The ROCC system which uses a software package, LISTER developed by PHOENIX Interface Technology, is designed for histological, cytological and immunohistological laboratories.

The system allows for live accessing of any specimen once a visual display screen, a major improvement on the batch processing system.

Potentially an invaluable tool in preventative medicine of suspected cervical cancer. Smears are matched with a picture of a test result.

Naturally, the system which handles such confidential

departments of a Pathology laboratory. In the Central Middlesex Hospital user interface programs for Histology, Auto-Antibodies Gynae and Non-Gynae Cytology have been provided.

The purpose of the system is to make available for each of the disciplines the capability to computerise operations from initially creating daybook entries to a complete record for each specimen formed from reports of tests as they are carried out.

Additionally, for the Cytology module a 'follow-up' system for positive results is being implemented. This is supplemented by an enquiry system for statistics and to aid research.

The function of the systems are as follows:

1. Daybook Entry —to enable details written on a request form to be entered on the system and stored.
2. Report Entry —to enable existing daybook entries to be recalled and reports added to the existing information.
3. Daybook Enquiry —gives the ability to make

enquiries on the daybook by using different search keys.

4. Report Printing —to produce hard copies of entered reports for attachment to the original request form.
5. Daybook Printing —to produce a hard copy of the daybook.
6. Report Follow-up —to provide a 'follow-up' system for positive and abnormal results of cervical cancer smears.

Valuable Help to the Consultant

One of the key advantages of the LISTER system is that it is designed to be used by personnel not trained in computing and is driven by a series of menus or 'Help' lists.

Specimens reach the laboratory accompanied by a request form containing the patient's details and an indication of the nature of the specimen and the test required. The system allows for the details to be entered at this stage, or later if there is a peak in the work load. The specimen is therefore allowed to enter the clinical procedures with a minimum of delay.

Before the specimen is ready for analysis there are a number of procedures that have to be carried out. At this stage the LISTER system provides valuable help to the consultant because of the facility to access from LISTER and from other mainframes previous historical data relating to the patient. This data may stretch back over many years and the speed of response, allowing patients to be promptly isolated if necessary, is most important.

For this reason the system provides a nested enquiry system enabling multiple search keys to be entered initially or added as the system 'sifts' the data. The search keys can include patient index number, laboratory number, surname, forename, date of birth. The system also provides for part of a search key to be entered allowing for searching a particular year only, or part of the known name if the operator is unsure of the spelling.

In the Cytology module, further automatic processing takes place to provide a 'follow-up' system for positive and abnormal results in cervical smears. As reports are being entered into the Cytology system the codes entered are matched against a predetermined set of diagnostic parameters that check whether further action is required on the specimen. If the report matches the parameters then a letter or letters are automatically produced for mailing, to the sender of the specimen, the patient or both. Once this procedure is invoked, a positive response is required from the sender of the specimen acknowledging receipt of the report and action taken before the entry can be deleted from the file. This ensures that the risk of a patient not being informed of a positive or abnormal result is obviated.

In addition to the 'day-to-day' operations there are a number of facilities that are included to provide the statutory statistical information required. This module has been developed in line with the forthcoming changes as recommended by Korner and to allow for speciality costing. Additionally, the LISTER database has an enquiry system that can be used to provide valuable statistical information for use in medical research.

A system providing powerful information retrieval facilities and holding sensitive data must have an effective security system. Naturally LISTER has powerful data protection facilities. The system not only provides passwords that only have access rights to certain facilities but they also define which files are available to which password. This allied to the ability to specify what procedures can be attempted at which terminal and the ability to specify what type of activity can be performed on each file provides a secure system. All activities on the system that relate to security on the system are journalised in a System Journal for audit purposes.



THIS BACK ON FILING CABINETS

and Linda Jones, departmental secretary, at Central Middlesex CC 2820 network processing system terminal.

on of the ROCC 2820 system will significantly improve laboratory

oratory Information Storage Enquiry and Retrieval System) aid implementation and easy assimilation into the practices of

entered the laboratory. Records can instantly be retrieved using of card files, pictured in the photograph, that the system is

stallation can act as a follow-up system to help in the diagnosis mined set of diagnostic parameters to give a real-time indication

tion is fully data protected.

Installation of the LISTER System

The LISTER system was implemented within six weeks of the specification agreement and only weeks after the installation of the ROCC 2820 system. The current installation has three terminals and a single printer together with 33Mb of disk storage. This is supplemented with a tape subsystem to provide archiving and security back up. The system has plenty of development potential as it can be expanded to between 32 to 48 terminals, with a printer or printers in each cluster. The system could be further enhanced to include simple and inexpensive videotex access directly from the wards. Importantly, this growth could be accommodated with no changes required to the LISTER package.

Since the initial installation, other modules have been implemented whilst the system has been in operation with no impact on the day-to-day running of the installation. LISTER has now been in operation for more than six months and has already proved to be invaluable not only to the laboratory staff in the day-to-day running of the laboratory, but as a powerful tool for research work.

The ROCC 2820 system is also proving its worth as a conventional data processing system. As the system supports the normal industry standard methods of data interchange, the task of converting old word processing

records has been greatly simplified. These records can be loaded onto the ROCC system without an expensive data preparation operation, as five years of records are being transferred the result is significant cost savings.

The final words on the installation must come from Tony Falcon:

"... The system has lived up to expectations and is already providing benefits not least because the staff have become involved with it and find it easy to use.

"There have been few problems with the implementation and those that have occurred have been resolved quickly with good support from PHOENIX.

"I am impressed by the way the system can be developed as I need it and can afford it. This is important in today's NHS. I particularly like the way the system can be fine tuned after the implementation to meet my requirements without great cost or bother."

Praise indeed, the enthusiasm which Tony Falcon has for his system testifies to its success. Already he is aiming to extend this to other areas such as stock control and costing modules, and he hopes to implement the ROCC ADVISOR office automation system.

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