# REPORT OF THE MEDICAL LABORATORY SERVICE REVIEW GROUP

October 2001

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## Chairperson's Foreword

As Chairman of the Laboratory Services Review Group I am pleased to present the accompanying report of the Group's work. The report is a product of partnership formed between management and staff to conduct the review. The work of the Group was conducted in a spirit of co-operation and understanding, with a desire to identify and resolve the issues effecting the Laboratory Services.

The review centred mainly on the work of Medical Laboratory Technicians and Technologists but other laboratory staff groups were consulted as detailed in the report. It is also important to point out that this is the first major review of laboratory services since the 1981 agreement.

It is clear from the conclusions reached by the Group that many serious issues exist and, if not addressed, could result in a crisis in the Laboratory services. It is also clear that examining or changing the working arrangements of one group alone is not going to resolve the issues.

The problems are laboratory wide but differ in their type and resolution particularly between small, medium and large laboratories.

The Review Group urges all management and staff associations to take seriously its recommendations and begin an agreed programme of implementation as expeditiously as possible.

*Liam Dunbar*

## Acknowledgements

The Group wishes to acknowledge the co-operation and assistance which was afforded to it by all those who participated in the consultation process and by the representatives of management and laboratory staff who met with the Group during the site visits.

The Group would also like to acknowledge the tremendous assistance and support provided by Sonia Shortt who acted as Secretary to the Group and wishes to thank Margaret Brennan and Geraldine O'Neill for typing the many drafts of the report.

Chapter 1
# INTRODUCTION

## Background

The establishment of the Laboratory Service Review Group has its origins in the complex negotiations conducted under the terms of the Programme for Competitiveness and Work (PCW) between Health Service Management, represented by the Health Service Employers Agency (HSEA) and Medical Laboratory Technicians/Technologists, represented by the Medical Laboratory Scientists Association (MLSA). These negotiations highlighted significant areas of disagreement between the sides in relation to the future organisation and delivery of services within hospital laboratories. Ultimately the issues involved, including pay, were referred to the Labour Relations Commission. Its recommendations were subsequently accepted by both the MLSA and the Minister for Health/HSEA and provided, inter alia, that:

> "A comprehensive review of the Pathology Service shall be undertaken. This review shall take place under the following broad guidelines:
>
> - *agreed independent third party*
> - *agreed terms of reference*
> - *to examine the operation of protocols during 9-5 hours and out of hours emergency work*
> - *the out of hours system*
> - *objective to improve service quality*
> - *outcome to be subject to joint review by the parties and where agreement not possible on service issues an agreed mechanism shall provide final arbitration.*
>
> *Upon publication of the Report the following stages shall apply:*
>
> - *Consultative Stage (3 months)*
> - *Arbitration Stage (3 months)*
> - *Due process to resolve outstanding Industrial Relations issues (6 months)*
> - *Implementation Date for Report (including service issues dealt with at final arbitration) shall be 6 months from date of final arbitration on service issues.*
>
> *This Review not withstanding, management and staff will co-operate in monitoring the service in order to reduce any inefficiencies in the system."*

## Terms of Reference

The terms of reference agreed for the Group were as follows:

"Having regard to the terms of the P.C.W. Agreement between health service management and Medical Laboratory Technicians and Technologists[1]:

*to conduct a comprehensive review of the balance between the demands being placed upon and the resources available to provide Pathology based Laboratory Services, with particular reference to Laboratory Technicians and Technologists.*

- *to establish and implement the most cost efficient and cost effective service delivery systems while maintaining the highest quality standards*
- *to identify and agree best working practices and protocols*
- *to establish the most appropriate working patterns and management practices having regard to the various service requirements of individual hospitals*

*and in the light of the outcome*

- *to recommend an implementation programme to achieve the optimum utilisation of resources for the future."*

# Membership of the Group

The review was conducted on a partnership basis by a group representative of management and staff.

The Group comprised of the following persons:

| | |
|---|---|
| Mr Liam Dunbar | Chairman |
| Mr John Bulfinº | Midland Health Board |
| Ms Grainne Connollyº | HSEA |
| Mr Pat Flynn˜ | Naas General Hospital |
| Ms Helen Franklin˜ | MLSA |
| Ms Eileen Jones˜ | St. James's Hospital |
| *Mr Tom Kehoeº | Mater Hospital |
| Mr John Lamontº | Beaumont Hospital |
| Mr Martin McDonaldº | HSEA |
| Mr Donal Minihane˜ | Cork University Hospital |
| Ms Clare Mulligan˜ | Longford/Westmeath General Hospital |
| Ms Sonia Shortt | Secretary |

* *Mr Tom Kehoe resigned from the group upon his resignation as Patient Services Manager, Mater Hospital. º indicates Management Representative while*

˜ *indicates MLSA Representative*

1 *The Expert Group on Medical Laboratory Technician/Technologist Grades has recommended that the designated title of Medical Laboratory Technicians and Technologists be changed to Medical Scientists.*

## Work Programme

The Group agreed to carry out a wide-ranging and detailed programme of work, which provided a sound basis for its discussions and outcomes. The work programme included a number of different methodologies, which are outlined below:

## Data Collection

- The services of Inbucon Ireland Ltd were retained to conduct a comparative analysis of the developments in the Hospital Laboratory Service during the 1990's from a staffing, workload, costs and work organization viewpoint.
- The outcomes of two surveys of MLSA members were available:
  - *the MLSA Demographic Survey 1998; and*
  - *the MLSA 1999 Survey of Out of Hours Pathology.*
- The Department of Health and Children's published statistics were used.

## Consultations

The HSEA and management representatives on the Group consulted with Health Service Management at the initiation of and throughout the review.

The MLSA consulted with its members at the initiation of and throughout the review.

The Group met with representatives of the Faculty of Pathology, Royal College of Physicians of Ireland on 10th March 1999.

A meeting with the Association of Clinical Biochemists in Ireland was held on 12th April 2000.

On 13th October 2000 the Group met with Mr. Martin Nicholson, President of the Institute of Biomedical Sciences (London) and a member of the Expert Panel which oversees the National (UK) Pathology Benchmarking Review.

## Site Visits

The Group undertook visits to a number of hospitals to meet and consult with senior hospital management and pathology laboratory representatives. Members of the Group visited Navan General Hospital on 15th May 2000, Mayo General Hospital, Castlebar on 18th May 2000 and St. Vincent's Hospital, Elm Park on 25th May 2000. These particular sites were chosen to give a representative sample of the different types and sizes of hospitals within the system.

In examining developments in laboratory services outside Ireland, the Group met with the managers of a number of hospital laboratories in Scotland on 4th September 2000. Scotland was identified as an appropriate comparator in terms of similarities in population densities and demographic profiles. The hospitals involved were the Western Infirmary, Gartnaval General Hospital, the Royal Infirmary & Maternity Hospital, Stoehill Hospital and the Victoria Infirmary in Glasgow, Monklands Hospital in Lanarkshire and Lothian Laboratory in Edinburgh.

## Documentation Review

The Group carried out extensive reviews of published reports and papers on laboratory services both nationally and internationally. During the course of the Group's deliberations a number of Health Boards published reports on the pathology service in their own region, which further informed the Group. A bibliography of the documentation is included in Appendix 1.

Chapter 2

# DEVELOPMENTS IN ACUTE & PRIMARY CARE

The findings outlined below have been arrived at by the Group following extensive consideration, assessment and correlation of all the data and inputs received as a result of the research programme. This element of the Group's work took considerable effort and time as the scope of the research was the first of its kind conducted across laboratory services nationally and great care had to be taken that data used had been verified and cross referenced.

Health services are in a state of constant and rapid development in response to technological, social and economic change, both domestically and internationally. The principal influences may be summarized as follows:

- Growing consumer consciousness in healthcare and growing demands and expectations for higher quality consumer orientated services.
- Growing awareness of the medico-legal implications of service practices as highlighted by a number of recent Public Inquiries.
- Recent developments in areas such as food safety, environmental health and the safety of blood products.
- The need to reduce waiting times for services and eliminate delays.
- The rapidly growing complexity of the service and medical and surgical interventions.
- The implications of the changing demographic profile of the population.
- The continuing pressure for expansion in the range of health care services generally.
- The Programme for Prosperity & Fairness which states that 'we must move from the way people have traditionally done things to one where the patient is at the center of how the service is organised' and aims 'to support and facilitate the development of family friendly policies at the level of the enterprise'.
- The National Health Strategy 1994
  The 1994 National Health Strategy '*Shaping a Healthier Future*' contains a policy statement which states:

  "the development of the acute hospital services over the next four years will thus be directed towards:

  - *Providing within each health board area a self-sufficiency in community and regional specialties."*

- Specific Service Strategies
  A National Cancer Strategy was published in 1996 which provided for the strengthening of pathology services to support diagnostic facilities. Similar strategies, for example, the National Cardiovascular Health Strategy, Cervical Screening, and the National Breast Screening Programme (Breast Check), have been developed and initiated in relation to clinical conditions.

- Food Safety
  The establishment of the Food Safety Authority and the importance of consumer protection through the introduction of hygiene and food safety standards has resulted in a higher profile for food microbiology.

- Blood and Blood Products
  Developments following investigations of previous practices in the Blood Transfusion Services Board and consequent changes in procedures and protocols in relation to blood and blood products have also had an impact on practices in laboratories. The Report of the Expert Review Group on the Blood Transfusion Service Board (1995) and the Report of the Tribunal of Inquiry into the Blood Transfusion Service Board (1997) have resulted in the establishment of a National Haemovigilance Office and a Haemovigilance Reporting System.

- Disease Surveillance
  A National Disease Surveillance Centre (NDSC) has been established. The microbiology laboratories nationally contribute to the surveillance process by informing the NDSC in relation to relevant micro data. When combined with the earlier establishment of Departments of Public Health Medicine within Health Boards this reflects a heightened focus on epidemiology both nationally and internationally.

- Enhanced Infection Control
  Increased emphasis has been placed on the prevention and control of hospital acquired infection. Enhanced infection control arrangements involving surveillance, prevention, control and responses in the event of outbreaks have had implications for laboratory workloads. Arrangements for the control of MRSA (Methicillin Resistant Staphylococcus Aureus) required particular attention. The Department of Health issued a set of guidelines to health agencies on this matter in 1995, including recommended laboratory procedures.

- General Practitioners' Increasing Demands
  Trends indicate that General Practitioners are making more use of analytical tests to aid diagnosis and treatment, and that these are likely to increase in the future.

## Hospital Activity Changes

Hospital activity statistics published during the period 1992 to 1999 reflect significant restructuring in the delivery of services and consequential increases in demand on diagnostic services. The appointment of new consultants, the acceleration in utilization of day procedures, the decrease in length of patient stay and the increase in the complexity of surgical procedures undertaken have all had an impact. This, when combined with efforts to enhance the consumer focus of services through, for example, reorganization of Out-patients Clinics has had implications for the organisation and level of laboratory work. Workloads have increased significantly with demands for faster turnaround times and more detailed analyses becoming routine. Recent health service developments such as waiting list initiatives, one stop clinics and the appointment of additional consultants, together with proposed increases in hospital bed numbers, will ensure that demand will continue to rise for the foreseeable future.

The following are indicative of general trends in acute hospital activity:

| Activity Changes | | | | Change +/- % | |
|---|---|---|---|---|---|
| Year | 1992 | 1997 | 1999 | '92 - '99 | '97 – '99 |
| Total In-patient Beds | 12,136 | 11,861 | 11,781 | -2.93% | -0.67% |
| Total In-patient Admissions | 511,586 | 536,817 | 530,757 | 3.75% | -1.13% |
| Average Length of Stay (days) | 6.74 | 6.5 | 6.6 | -2.08% | 1.54% |
| No. of Day Beds | 462 | 612 | 675 | 46.10% | 10.29% |
| Bed Occupancy | 83.38% | 83.30% | 82.90% | -0.58% | -0.48% |
| No. of Day Cases | 155,326 | 249,472 | 293,533 | 88.98% | 17.66% |
| No. of A&E Attendances | 1,131,805 | 1,213,321 | 1,229,303 | 8.61% | 1.32% |
| Out-patient Attendances | 1,805,038 | 1,928,734 | 1,957,710 | 8.5% | 1.5% |
| Approved Hospital Consultant Posts | 1,158 | 1,292 | 1,388 | 19.9% | 7.4% |

# Developments in Pathology Services

## Role of Pathology Services

Pathology services are an integral part of clinical practice. Pathology services encompass a wide range of related activities including infection control, blood transfusion, post mortems, epidemiology, audit, education, research and development and direct clinical care in certain circumstances.

The elements of a pathology service essential for the delivery of quality health care include:

- the provision of advice on the selection of appropriate investigations, on patient preparation and sampling and the indication of any additional tests which may assist diagnosis or treatment
- provision of a high quality laboratory service, on a 24 hour basis where clinically indicated
- interpretation of results and provision of advice on further investigations
- ensuring that the quality of results and their delivery meets the needs of patient care
- provision of a quality blood product service
- provision of a specimen collection and delivery service, including a quality phlebotomy service
- provision of a safe working environment for staff
- provision of an infection control service
- provision of training and continuing education for all staff working in the laboratory.

Most laboratories have four or more major departments, which may be divided into sub-specialities. The current main specialities are: Clinical Biochemistry, Haematology, Microbiology, Histopathology, Blood Transfusion and Immunology, with many sub-specialities including: Coagulation, Virology, Cytopathology, and Endocrinology. *(Attached at Appendix 2 is a summary of the main disciplines)*

## Demands on Pathology Services

As in other areas of diagnostic medicine, pressure on pathology services has grown over the years with increasing numbers of requests for investigations and an increasing range of investigations now available. The increasing sophistication of investigative techniques has meant an increase in workloads. Another major factor has been the significant increase in General Practitioner (GP) generated workload.

### Complexity of Pathology Services

The practice of pathology has become progressively more diverse and complex. Pathology based doctors are no longer trained as general pathologists but as histopathologists, haematologists or microbiologists, etc. Some have developed a special interest and expertise in a particular branch within their chosen specialty, e.g. diagnostic cytology, coagulation, virology etc., with corresponding demands for specialist laboratory support in certain hospitals.

## Pathology Services Resourcing

Laboratory services have evolved in a somewhat unplanned manner, reacting to demands from clinical services, national health developments and scientific developments. As a consequence there has been limited planning in terms of technological/scientific skills, staffing levels and demand implications.

The information received indicates that there is no standard approach to measurement of workloads or technological requirements in laboratory services. Individual laboratory services have evolved without sufficiently clear national or local policies.

The demographic profile of existing Medical Laboratory Technician/Technologists indicates that between 20-30% of staff in each discipline intend to retire by the year 2010. If this were to happen it would leave a significant gap not only in staffing numbers but also in levels of experience. This problem could be further exacerbated by indications that less than half of recent entrants to the profession are satisfied by their career progress to date. Over 94% of these graduates are in the 20-30 age group and they total 17% of the current workforce. However, slow progression and lack of job satisfaction may see them move to other work careers.[2] It should be noted that this survey was undertaken prior to the publication of the Report of the Expert Group on Medical Laboratory Technician/Technologist Grades in February 2001.

The environments within which Medical Laboratory Technicians/Technologists work vary widely. While differences occur according to laboratory size and occasionally, laboratory type, the variations according to regional location are very considerable and indicate very different working conditions and experiences for Medical Laboratory Technicians/Technologists in different health board areas.

### Laboratory Management

Information returned in the Inbucon survey indicated a lack of structure in laboratory management from a procedural and policy point of view. The lack of centralized control of core management activities disrupts the smooth operation of service provision, adversely affecting work and contributing to the dissatisfaction among Medical Laboratory Technicians/ Technologists. Accountability for the operational aspects of laboratories needs to be defined together with the reporting and working relationships within hospital management structures.

2 *Medical Laboratory Scientists Association 1998 Demographic Survey*

## Working Arrangements

Working arrangements in laboratories were last formally agreed at national level in 1981.

Current arrangements are based on:

- Routine working hours of typically 35 hours per week with some local variations (Monday to Friday 9.00am to 5.00pm or 9.30am to 5.30pm)
- Semi routine service on Saturday

  morning and
- Emergency working hours at all other times, payment for which are covered by the 1981 agreement (Appendix 3).

The out of hours payment and working arrangements agreed in 1981 reflected the need for a limited service delivery during these hours with laboratory staff on sessions and/or on call delivering low volume services to ensure that critical emergency services were delivered on a 24 hour basis. As has been outlined above, the environment in which the laboratory works and the demands on the pathology services have changed significantly in the last twenty years. Workloads both within the normal working day and during the emergency working hours have increased to a level not envisaged when the 1981 Agreement was compiled.

The working patterns in the pathology services have evolved to meet the increased demands and changing needs of the service. The evolution and development of the service has however been constrained by the fact that all developments must fall within the 1981 agreement.

The current system is operating in a manner which requires Medical Laboratory Technicians/ Technologists to work for excessively long periods. In separate instances, in two different health board areas, individual members of staff reported providing on-call cover for continuous periods of up to two weeks.[3] While these particular circumstances may be exceptional, general data returns indicate trends which present difficulties from both a quality of work and a staff health and safety perspective. This problem is particularly acute in small laboratories.

In addition, it is important to note that in some disciplines which do not provide a routine on-call service, the emergency provisions of the 1981 agreement are being used to facilitate the throughput of increased routine workload on an ongoing basis.

## Demand management

Productivity in the sense of measuring the effectiveness of output from work systems is a complex matter within individual laboratories and becomes even more complex when attempting to compare laboratories. There are no universally accepted methods of measuring laboratory workloads, resulting in individual laboratories using different workload measurement systems. Productivity measurement is further complicated by general acceptance that volumes of activity are not in themselves a criterion of efficiency, effectiveness or value for money, being dependent on profiles, capital investment, automation, instrumentation, bed numbers and inappropriate requesting. The differences in the nature of the demands and the resources which arise between a major academic teaching hospital and a regional hospital highlight the complexity involved in the analysis of workload.

3 *MLSA 1999 Survey of Out of Hours Pathology*

Analysis of workload figures during the 1990s by Inbucon[4] shows that there have been substantial increases in laboratory workload levels in all of the hospitals that participated in the study; in small hospitals by 62.78%, in medium hospitals by 28.73% and in large hospitals by 41.69% *(Appendix 4 - Table 1)*.

(i) The Inbucon data collection exercise, referred to earlier, included compilation of information on the span of activity within laboratories based on returns supplied by hospitals relating to activity within two specified weeks *(Appendix A - Tables 2 & 3)*. Hospitals were asked to specify the total number of specimens, blocks or case numbers received during different periods of the day. For purposes of analysis, hospitals were grouped into small, medium and large categories. The data returns indicated that, during the sample weeks, approximately 88% of the workload in the smaller and medium sized laboratories occurred during normal working hours. In the larger laboratories an average of 81% of the workload occurred during normal working hours.

(ii) In general terms there is an 80% - 20% split between workload undertaken during normal working hours and 'out of hours' in the case of the larger hospitals. It is important in considering these statistics to recognise that in all cases protocols exist relating to the requesting of tests outside normal hours on the basis that any such requests should be of an urgent or emergency nature. It is also essential in interpretation of the statistics to recognise that varying but significant volumes of the overall activity within the laboratories will relate to work which may be referred from General Practitioners or other sources outside the hospital. It is therefore a reasonable assumption that, in relation to in-patients or those presenting at Accident and Emergency departments, the proportion of overall workload undertaken outside normal working hours is significantly greater than 20%.

(iii) This would tend to support a view that the existing normal working hours are incapable of coping with the current demand levels and test requests spill-over into the hours covered by the emergency/out of hours system and that pressures within the system to ensure speedier and more efficient diagnosis by clinicians have effectively undermined traditional protocols relating to emergency and non-emergency test requests.

Workload measurement is further complicated by a lack of established and accepted demand management systems. The most common attempt to manage demand is based on:

- protocols which are developed by the laboratory to guide the requesting physicians on the most appropriate test requests

  and/or

- guidelines which are developed to advise what services are available from the laboratories particularly outside routine working hours.

Neither is particularly effective in keeping demand to a minimum. The MLSA 1999 Out of Hours Survey returns indicate that guidelines are issued for out of hours work in 72% of workplaces though regular review occurs only in 38%. Tests outside guidelines can be authorized by laboratory consultants, by laboratory services staff and by clinicians. Not all of those who can authorize tests outside guidelines work within the laboratory or have accountability for

4 *Inbucon Report*

laboratory costs, which reflects the combination of internal and external factors combining to maintain pressure on the system. 73% of Medical Laboratory Technicians/Technologists regularly carry out laboratory tests that are outside agreed guidelines, a clear indicator that the system is not effective.[5]

The Group is aware that the development of Service Directorate models under the 'Clinicians in Management' initiative is geared towards focusing the use of all hospital resources to the delivery of agreed service and practice plans. As part of this process the effective utilization of hospital laboratory services is being considered. Initial results seem to indicate that the focus has been on process matters with the allocation of resources including costing being in the very early stages.[6]

### Data indicative of general working patterns

The mean of the maximum continuous hours of routine duty and on-call cover by Medical Laboratory Technicians/Technologists was identified as being:

Small laboratories 52 hrs

Medium laboratories 29 hrs

Large laboratories 20 hrs[7]

| Laboratory Size (Number of Staff) | Mean | Maximum | Minimum | Median | Mode | Valid Number |
|---|---|---|---|---|---|---|
| 1-20 | 52 | 336 | 6 | 32 | 24 | 118 |
| 21-70 | 29 | 168 | 4 | 24 | 24 | 116 |
| > 70 | 20 | 96 | 4 | 24 | 24 | 150 |
| Overall | 33 | 336 | 4 | 24 | 24 | 398 |

### Frequency of on-call

In relation to the frequency of on-call, respondents who participate in on-call indicate that they work an average of 4 times per month in the larger laboratories. Staff in smaller laboratories participate more frequently with an average of 5 times per month.[8]

Taking account of the extended hours of duty required in the small laboratories the burden of availability on Medical Laboratory Technicians/Technologists in small laboratories is considerably greater than on their colleagues in medium and large laboratories.

In accordance with the 1981 Emergency Services Agreement *(Appendix 3)* there are three systems under which on-call service is provided:

5 *MLSA 1999 Survey of Out of Hours Pathology*

6 *Clinicians in Management Presentation, 23 June 1998*

7 *MLSA 1999 Survey of Out of Hours Pathology, Table 4.3.5b*

8 *MLSA 1999 Survey of Out of Hours Pathology*

(i) In laboratories where workload is deemed to warrant it, a session system operates from 5pm until midnight, for which a sessional rate currently applies. After midnight such laboratories operate a fee per call system. This system is in operation in all large hospitals and many medium sized hospitals are now converting to it. Where session/call systems operate cover is provided by a minimum of two rotas running in parallel. However larger hospitals will have a minimum of three rotas covering the principle disciplines required on call, i.e. biochemistry, microbiology and haematology/blood transfusion. In some hospitals blood transfusion is an additional separate session. Individual sessions may require up to four people rostered to provide adequate cover. Each session is then followed by one individual providing cover from midnight to 9am.

(ii) In pathology departments where call numbers are considered too low to warrant a session, a standby and fee per call applies. However if calls exceed 60 per week the fee per call reduces. This system is employed principally in small/medium laboratories with one person providing cover from end of normal day to the following morning. In most instances the participants on the call rota are required to provide cover across all disciplines. This means that they may be required to perform biochemical, haematological/blood transfusion and microbiological analyses as a single call.

(iii) Areas where urgent requests outside normal working hours are less than five per week operate on a non-rostered system and a B rate call applies. This system is applicable also to individual departments where an emergency cover is not normally required.

### Mode of staffing rotas

Rotas are covered by persons routinely working within the specific department supplemented by persons from other departments. Over half of the respondents (59%) do out of hours work outside their routine discipline. This is most common in smaller laboratories (84%).[9]

### Recovery time

Staff who provide out of hours cover are entitled to minimum recovery time agreed in 1983 *(Appendix 5)*. Where workload figures warrant it, some hospitals provide additional recovery time over the minimum, however this is not always possible in smaller laboratories. In most cases this recovery time has to be taken out of the routine work schedule.

### Sustainability of current work systems

It is the Group's view that the current system is not sustainable in the long term. Relevant factors are:

- With the change in clinical practice and the requirement for a more rapid turn around time, the practice of performing only non-deferrable work from 5pm to 9am is not perceived as being adequately responsive.
- Increased demand for new and more specialised investigations.
- Substantial increases in workloads during the routine day have resulted in insufficient time to devote to necessary developmental work.

9 *MLSA 1999 Survey of Out of Hours Pathology*

- Substantial increase in workloads out of normal working hours results in raised stress levels among staff.[10]
- Work profiles indicate long hours, long unbroken periods of work and overall an antisocial pattern of working life. It is clear that the work schedule of some participants should be a cause of considerable concern.
- Dissatisfaction among Medical Laboratory Technicians/Technologists providing the out of hours service, particularly in smaller laboratories, with regard to remuneration, frequency, extended periods of cover required, multi-disciplinary nature of cover required and also the application of the quota system provided for in the 1981 agreement whereby the fee per call reduces once 60 calls per week is exceeded.[11]
- Dissatisfaction with the operation of recovery time in general.[12]
- The disruption, caused by the gaps in routine staffing levels as a result of recovery time particularly where the out of hours cover has been provided to a discipline which is different to that which loses the routine service hours is weakening the routine service.
- As the demand on the out of hours service has increased, the totality of hours available to the routine service has decreased due to the operation of the recovery time system.
- Indications are that in certain locations only 50% of work performed during on-call is emergency work indicating an inability of routine work schedules to deal with routine work being generated.[13]
- The expressed intention of 40% of participants in on call rotas to discontinue providing cover before retirement.[14]
- Development of patient centred services to the maximum extent can only be achieved with the full support and co-operation of clinical support services.

It is clear that while the out of hours is treated as a completely separate operation to that of the normal laboratory service, the two are intertwined and changes in one system inevitably impact on the other. Increases in workload in the routine service are reflected by similar increases in the out of hours service.

It is acknowledged that trends in clinical practice coupled with patient choice are heading towards an extended operating day and week for diagnostic services. Cognisance must be paid to the clinical workload, work patterns, transport times, information technology, staffing levels, geographical and seasonal variations before deciding which service pattern is appropriate for individual hospital laboratories.

The provision of an extended routine service must match not only analyser capacity but clinical needs, for example there would be little point in providing routine results in the early hours of the morning unless the results reported were going to be of immediate value to the clinician.

In common with most areas of health care, laboratory services are demand driven; demand is potentially infinite and resources are not.

*10 MLSA 1999 Survey of Out of Hours Pathology*

*11-14 MLSA 1999 Survey of Out of Hours Pathology*

Chapter 3
# CHANGES IN SCIENTIFIC PRACTICE

## New techniques

New applications, analyses and procedures are introduced through a number of routes. Every new test that is introduced into the laboratory must be validated within that individual laboratory setting, and if not in common use locally, normal ranges must be established for the population of that area. This establishment and validation process requires a considerable amount of time and effort on the part of the staff who carry out the work.

## Technological advances

As in every area of life, advances in technology have had a spectacular impact on the provision of diagnostic laboratory services internationally. The technology available has been increasing both in sophistication and cost, with significant advances in automation particularly in biochemistry and haematology. Acquisition of analysers and new technologies has assisted the laboratories to manage the growing workloads. It is important to note however, that there are areas of laboratory work such as histopathology, microbiology and blood transfusion where there is still a heavy dependence on manual, and therefore labour intensive, techniques.

In certain circumstances the introduction of new instrumentation and new techniques outside the traditional laboratory setting can change the way in which laboratories work and increase demand on laboratory resources. Good examples of this are the development of Near Patient Testing (NPT) and the introduction of new intervention techniques such as bedside biopsies. *(A summary of the issues arising in relation to NPT is attached at Appendix 6.)*

When used appropriately by adequately trained staff these developments may offer considerable advantages to both patient and staff. However, the expertise of laboratory staff should be used in the assessment of this type of equipment and in the training of staff who will use it, as inappropriate use can adversely affect patients and is not cost effective. In assessing the value of NPT it is important to ensure that priority is given to quality considerations and that all costs (including consumable and training costs) are taken into account.

## Information and management technology

The computerisation of ordering tests and reporting results enables a greater number of specimens to be handled more efficiently. Developments in information technology have led to improvements in the quality of output. The impact of technology advances and information technology has resulted in a reassessment of the manner in which work has been traditionally organised within laboratories.

Information technology has assisted improvements in turnaround times for test results with consequent implications for patient throughput, bed usage and waiting times.

In certain cases, developments have also led or will lead to increased utilisation of remote ordering. Transmission of test results and reports with increased frequency and timeliness will also have an increasing impact on clinical services in general.

It is also the case that reliability is improved through the acquisition of newer technologies and that such technologies allow some analyses traditionally associated with different disciplines to be carried out on the same analytical platform as part of a modular approach.

The impact of improved technology can manifest itself as follows:

- improved interaction between laboratory services and their users at the interface
- pressure to have faster turnaround times
- more analysis conducted upon individual specimens and more specimens analysed
- the availability of analysis facilities day and night
- a re-examination of the skill-mix required within laboratories
- a review of the traditional boundaries between the different disciplines within pathology and
- a re-assessment of the way work has been traditionally organised within laboratories.

Chapter 4
# FUTURE DEVELOPMENTS

## Qualitative management

In a key diagnostic support service the quality of results are of critical importance. Most laboratories have both internal and external quality assurances schemes in operation. Typically, laboratories are not at present accredited by external agencies.

A recent move towards the accreditation of laboratories and improved quality assurance and quality control has involved significant time input. In particular the initial work up phase requires the allocation of considerable additional resources. The maintenance of accreditation standards will be dependent on laboratories being able to continue the qualitative measures long term.

Increasing workloads and decreasing turnaround times may result in laboratories being unable to pay sufficient attention to Health and Safety, Quality Assurance, Continuing Professional Development, laboratory protocols, standard operating procedures or communication, particularly with the users of the service. Clearly provision of a quality service in the context of increased workloads and accreditation requires increased resources.

## Research and development

Research and development in areas such as new methodologies, new technologies, disease states, the effectiveness of analytical procedures and the effectiveness of clinical treatments are an important aspect of laboratory activities. They contribute not only to the continuing professional development of the Medical Laboratory Technicians/Technologists but also to the depth and range of expertise available within the service. Pressure of work and cost considerations have led to a practice of recruiting postgraduate research students to carry out laboratory research work.

This is a practice which has long term implications for the development and quality of the service and for the recruitment and retention of Medical Laboratory Technicians/Technologists. Facilitating the involvement of Medical Laboratory Technicians/Technologists would lead to a number of benefits:

- The application of the knowledge and skills they acquired in a clinically focused environment in a more effective manner than science graduates perhaps unfamiliar with the specific characteristics of a clinical environment

- The opportunity to acquire postgraduate qualifications in an appropriate hospital based environment
- The time and opportunity to gain appropriate research experience to apply later in the introduction of new technologies into the routine environment
- Increased staff motivation, development and satisfaction through improved opportunities in the areas of research and development, thus benefiting patient care.

## Training and development

Training and development of Medical Laboratory Technicians/Technologists has been covered in some depth in the Report of the Expert Group on Medical Laboratory Technicians/Technologists grades.[15] There is one aspect of training which needs to be addressed from a Service Review perspective. The delivery of a quality laboratory service is dependent on the availability of key skills and competencies on an ongoing basis.

In terms of numbers trained and costs, commitment is being made to employee training throughout the laboratory service in most hospitals. It was noted from the Inbucon analysis that few laboratories are involved in any systematic assessment of training needs and formal training plans are even more unusual. The absence of systematic identification of training needs and follow up may result in a lack of focus and direction in the overall training effort. When there is no clear training plan based on an assessment of what the function needs in terms of performance or competency improvement the training activity tends to be driven from the bottom up. Employee input into training needs is important, but this should primarily remain a management responsibility based on an overview of the needs of the particular laboratory service unit. The Group supports the provision of additional management training for staff who are expected to manage a laboratory or a department.

## Skill mix

It is a matter of fact, throughout the health service, that traditional demarcation lines both between professional groups and between professional and non-professional groups need to be addressed. In many ways, the laboratory may be seen as a microcosm in this regard insofar as different groups are involved in the delivery of service (Medical Laboratory Technicians/ Technologists, Pathology Consultants and NCHDs, Clinical Biochemists, Medical Laboratory Assistants and other Support Workers), while all are committed to delivering best quality, they may tend to focus excessively on the maintenance or advancement of their own element of service provision.

*15 Report of the Expert Group on Medical Laboratory Technician/Technologist Grades, February 2001.*

The Group had available to it reports which indicated that, in some instances, Medical Laboratory Technicians/Technologists were reported to be undertaking tasks, e.g. sorting of samples, routine administrative work, packing of samples for dispatch etc, which would be more appropriately carried out, where volume levels were sufficient, by Medical Laboratory Assistants or other similar support staff. It was considered also that while such support staff would be involved in areas such as reception, dispatch, opening mail, sorting, bar coding, labelling and similar tasks, there are other areas, which might also benefit from a support worker grade. It is felt that the issue should also be considered in the light of reported difficulties in some areas in recruitment and retention of qualified staff. However, such initiatives should be adequately monitored to ensure continuity of quality service.

In determining the skill requirements within the laboratory, pathology departments need to maximise the skills of all their current staff and to review the way in which jobs are organised and work delivered. The formalisation of the support worker grade of Medical Laboratory Assistants nationally, responsible to the Chief Technologist, and employed under the approved job description is a means by which appropriate and specific duties may be devolved under supervision, thus enabling the Medical Laboratory Technician/Technologist to devote more time to scientific duties. The job description attached at Appendix 7 has been agreed.

However it is imperative that an increase in the numbers of Medical Laboratory Assistants should not be seen as a means to reduce the numbers of scientifically qualified staff but rather as a support worker to assist in the performance of ever increasing non-scientific duties.

It is however the Group's opinion that Medical Laboratory Assistants appointments in small laboratories will be minimal as it will reduce the ability of the laboratory to provide a scientifically staffed out of hours service.

## Amalgamation of Grades

The Expert Group on Medical Laboratory Technician/Technologist Grades[16] has recommended that discussions take place between all professionals in the medical laboratory service, the HSEA, and the Department of Health & Children, with a view to establishing a standard uniform career structure for all scientific staff. This Group supports that recommendation.

16 *Inbucon Report – Section 6: Workload and Activity*

Chapter 5

# CONCLUSIONS AND RECOMMENDATION

## Overview

The Group, having considered in detail a wide range of issues in the course of its work, has identified a number of problems affecting the delivery of Laboratory Services. In large, medium and particularly in small hospitals the common issues are:

- Increased workloads – routine, semi routine and emergency
- Increasing demand for the provision of extended services outside traditional core hours
- Demand management systems
- Developments in the application of new technology
- Staffing resources to cope with demands
- Increasing pressure on individual staff to give more time to providing out of hours cover
- Dissatisfaction with present arrangements being voiced by users, staff and management.

The Group agrees that these issues warrant further detailed examination and the following recommendations are designed to develop realistic solutions in a holistic manner.

## Demands versus Resources

As pathology services become ever more integral to the practice of modern medicine at all points of delivery, the ‘core role’ of the laboratory needs to be recognized. This review is primarily concerned with the service carried out within the laboratory. Staff in the laboratory wish to continue to support good clinical practice by providing quality and timely laboratory services. In order to do so a balance needs to be struck between demand and resourcing. Unregulated demand is unlimited and cannot be matched with resources. Doing nothing about demand management is no longer an option if quality laboratory services are to be maintained.

As outlined, the level and nature of demand on laboratory services has changed in the last 30 years and particularly in the last 10 years. The increasing sophistication of instrumentation has to a degree allowed the service to absorb large increases in routine demand. However, the development of more specialised and wide-ranging investigative testing has outstripped any increased capacity created by instrumentation. It is recommended that a demand resource process be put in place to ensure that the quality and timeliness of the service is not jeopardized.

There is a limit to what can be done with the people and facilities either currently available or likely to be available in the immediate future. Some hospital laboratories are currently experiencing difficulties in filling Medical Laboratory Technician/Technologist posts and it

would appear that the current intake of undergraduates will not provide sufficient qualified staff to replace those intending to retire in the immediate future.[17] It is noted that in order to meet future requirements, the Expert Group on Medical Laboratory Technician/Technologist Grades recommends that the number of undergraduate places available countrywide be increased to 100.[18] As it takes five years for a Medical Laboratory Technician/Technologist to qualify, a decision to increase staffing nationally will take at least 5 years to fully implement, other than where staff can be attracted from elsewhere. The Group recommends that the Department of Health and Children and health service management liaise with the Academy of Medical Laboratory Science to develop appropriate recruitment strategies. To promote and encourage recruitment all unnecessary divisions should be removed; in this light it is also recommended that a standard career structure for all scientific laboratory staff be introduced.

### Skill-Mix

In determining the skill requirements within the laboratory the pathology department needs to maximize the skills of all their current staff and to review the way in which jobs are organised and work delivered. It is recommended that the Medical Laboratory Assistant grade be introduced nationally to facilitate optimum utilization of the professional skills of scientific staff.

It is recommended that all Chief Technologists/Laboratory Managers in consultation with the Human Resource function, undertake an analysis of duties which could be performed by this support grade in their laboratory.

### National Demand Management

Better information is the key to better demand/resource management systems. The evolution of the current laboratory system and the lack of development of resource or workload measurement systems does not allow an informed approach to capacity or productivity assessment. There is no standard measurement system of activity which is a requirement in the clinical laboratory services so as to facilitate comparisons and benchmarking. It is clear that developing appropriate measurement systems, which will continue to meet the changing needs of the service, is critical. It is evident that each area taking its own approach to developing such a system would be wasteful of resources and would not meet the needs
for useful national data. In light of this it is recommended that a group should be formed, under the auspices of the Department of Health and Children, to consider and report within a short timeframe on a national approach to developing demand management and workload measurement standards for laboratory services. Given the apparent difficulties with the development, maintenance and compliance of a protocol based system, recent developments, such as benchmarking (the National (UK) Pathology Benchmarking Review), offer a potential way forward which should be considered in the Irish context.

The group established to consider these matters must include Laboratory Consultants, Medical Laboratory Technicians/Technologists, Biochemists, Clinicians using laboratory services including a representative from General Practice together with representatives from general management.

In addition given the potential short supply of Medical Laboratory Technicians/Technologists the group should also examine the development of adequately resourced specialist reference centres.

### Local Demand Management

There cannot be an effective hospital/health board service plan without consideration of the implications for diagnostic support services. It is vital that staff responsible for the delivery of these services are consulted and involved in the service planning at all stages. It is recommended that the introduction of improved or new services or the appointment of new Laboratory/Clinical Consultants should include a laboratory services demand/capacity assessment. It is further recommended that Clinical and Laboratory Consultants together with Medical Laboratory Technicians/Technologists and general management develop a process based on clinical budgeting, to regulate demand and costs without impacting on clinical care.

The Group supports the recommendation of the Expert Group on Medical Laboratory Technician/Technologist Grades that a Pathology Management Committee should be formed in each hospital, where such does not exist at present.[19] The membership of the committee would be representative of all disciplines, which contribute to the efficient, safe and effective functioning of laboratory services. The committee would be responsible for the appropriate provision of a high standard of laboratory services through the management of staff, workload, best practices and resources as well as maintaining active communication with all relevant parties, including hospital management, consultants, general practitioners and nursing staff.

## Training and development

Training and development in a rapidly developing service cannot be reliant on the aspirations of individual staff members. Resignations or retirements could create a major gap in the skill required for the laboratory and in the current labour market it will not always be possible to recruit the skills required.

It is recommended that each Chief Technologist/Laboratory Manager should take responsibility for developing a key skills and competency matrix for the current and future laboratory service needs. This should form the foundation of a training needs analysis and training and development plan for the laboratory. To be effective, it is recommended that this needs to be underpinned with a specific training budget based on the overall laboratory payroll costs. Over a period of time this will ensure that the laboratory will develop and maintain the necessary level of skills and competencies to meet service demands.

To ensure that the current managers receive training appropriate to their responsibility in this area, it is recommended that staff management skills and competencies should form part of the training and development plans for the laboratory. It is also recommended these skills form part of the development plans for future managers.

*19 Report of the Expert Group on Medical Laboratory Technician/Technologist Grades, February 2001.*

## Resource management

It is recommended that all resources central to the laboratory operations, e.g. Medical Laboratory Assistants, Phlebotomists, Clerical and Portering staff, should be under the day to day direction of the Chief Technologist/Laboratory Manager. S/he should be consulted about changes to staff or working arrangements that impact on the laboratory during the decision making phase and prior to implementation.

## Pilot projects

As a means of addressing the common issues outlined:

- increased workloads – routine, semi routine and emergency
- increasing demand for the provision of extended services outside traditional core hours
- demand management systems
- developments in the application of new technology
- staffing resources to cope with demands
- increasing pressure on individual staff to give more time to providing out of hours cover
- dissatisfaction with present arrangements being voiced by users, staff and management,

it is agreed and recommended that pilot projects be developed and implemented in a number of sites throughout the country (i.e. to involve a large, a medium and a small hospital laboratory). All pilots will focus on service and staff needs by addressing the issues above, with a view to improving the quality of the service from both perspectives. The Group recognises that local needs and service provisions vary but that ultimately local solutions to patterns of service need to be developed within the parameters of a national agreement. Conversely the national agreement needs to be informed by local service and staff needs. The Group envisage that collaborative pilot projects will inform a national agreement which will meet local needs for flexibility while maintaining pay costs controls and acceptable consistency in the profession's employment terms and conditions.

## Implementation of Recommendations

It is vital, as stated previously, that both management and staff in individual hospitals use the recommendations presented in this Report to address the concerns particular to their own laboratory services within the framework outlined.

A joint Management/Staff Representative Group will be established at national level to monitor the implementation of the recommendations of this Report. The Group will select pilot sites in consultation with individual hospitals, maintain an overview of the agreed pilots and evaluate the results. The Group will subsequently negotiate a new national agreement aimed at meeting the needs of all stakeholders.

## Appendices

1. Bibliography
2. Summary of the Main Laboratory Disciplines
3. 1981 Emergency Services Agreement & Current on-call Rates
4. Extract from the Inbucon Report
5. 1983 Agreement regarding Recovery Time
6. Near Patient Testing Discussion Document
7. Medical Laboratory Assistants Job Description

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## 2. Summary of the Main Laboratory Disciplines

### Clinical Chemistry

Clinical Chemistry (also called Clinical Biochemistry or Chemical Pathology) is the study of the chemical constituents of the human body in health and disease. Most tests are carried out on blood or urine but other body fluids, cells and tissues may also be analysed. It is increasingly concerned with major screening programmes of neonates and adults. The discipline is primarily a hospital-based service but offers a significant service to general practitioners.

Staff perform a wide range of tests including routine automated tests, metabolic function tests and endocrine tests in order to determine the diagnosis of metabolic disease and to monitor drug therapy. They may also be required to investigate drug overdoses. The discipline is a highly automated one which has a large volume of work and a wide range of laboratory investigations.

### Blood Transfusion

Staff perform tests to determine blood grouping and antibody identification in order to provide compatible blood and blood products. This service is essential in the acute hospital context where modern medical techniques and treatments rely heavily upon the support of such products being available. Staff also undertake specialized testing for the resolution of grouping and matching problems, the preparation of diagnostic grouping reagents, the provision of rare blood and tissue-matched blood products and the preparation of blood components and plasms fractions in order to supply the needs of acute hospitals.

### Haematology

Haematology is the study of blood and blood-forming tissues. Haematology laboratories provide an investigative, diagnostic and clinical service for the care of patients with anaemia, haematological malignancy, haemaglobinopathies and coagulation abnormalities. Laboratory staff perform a wide range of tests on blood and bone marrow aimed at diagnosing and managing haematological conditions ranging from leukaemia to control of anti-coagulant therapy.

### Cellular Pathology

Cellular Pathology encompasses two related but different elements: Histopathology and Cytology.

### Histopathology

Histopathology is concerned with the diagnosis and management of disease through the examination of tissue which has been obtained through surgical removal, biopsy or autopsy.

Staff prepare tissue removed during surgery or at post mortem using techniques such as microtomy, routine and specialised staining procedures and frozen sections so that they can be examined under the microscope. Increasing use is made of Immunocytochemistry and Molecular Biology techniques as an aid to diagnosis, prognosis and best therapeutic practices.

## Cytology

Cytology is the microscopic study of free cell specimens. It is usually, though not always, closely linked to Histopathology, and refers to the examination of exfoliated or aspirated cells. It plays a crucial role in the national breast and cervical screening programmes. Screening of cervical smears and non-gynaecological cellular material forms a large part of the workload. Fine needle aspiration of abnormal tissue (e.g. breast lumps) is increasingly being used for rapid diagnosis. Laboratory staff are involved in preparatory techniques in cytology and also in studying the cells under investigation to detect abnormalities.

## Medical Microbiology

Staff in microbiology laboratories are primarily concerned with providing a service to clinicians to aid in the diagnosis and treatment of microbial diseases such as meningitis, respiratory tract, enteric and wound infections. They also provide a public health function by assisting in the control of epidemic and sporadic disease.

Tests are carried out to isolate and identify disease-causing micro-organisms, fungi, protozoa and parasites. Serum is tested for antibodies to infective agents and for microbial antigens. Specimens commonly examined are blood, urine, faeces, sputum and swabs from various body sites.

## Virology

Virology, together with bacteriology and mycology, is concerned with a study of all aspects of disease caused by infectious agents.

Staff in virology laboratories are primarily concerned with the detection and identification of viruses such as herpes, influenza and the human immunodeficiency virus (HIV). Tests include the culture of viruses in living cells, testing of blood samples for antibodies to viruses and the use of specialised techniques for the detention of viral particles in human tissue. These laboratories also have a heavy routine commitment to population screening for immunity to hepatitis and rubella and to monitoring the efficacy of vaccines. Molecular biology techniques are widely applied.

## Immunology

Immunology is concerned with the study of the diseases of the immune system.

Staff in immunology laboratories specialize in the investigation of abnormalities and disturbances of the immune system associated with, for example, bacterial and viral infections, parasitic infestation, allergy, malignant and autoimmune diseases and immunological deficiencies. Changes are analysed in antibodies and other proteins and leukocytes are identified in conditions such as leukaemia and AIDS. Investigation takes place in order to assess responses to vaccination or treatment and, in transplant recipients, to measure the function of their immune system.

## 3. 1981 Emergency Services Agreement & Current on-call Rates

Revised Emergency/On-Call System for Medical Laboratory Technicians/Technologists, effective from 1st May 1981.

* Rates as per 1st April 2001

1. In hospitals, as determined by Management, a Technician/Technologist to be on duty on a rota basis from normal finishing time up to midnight each day, Monday to Friday. This period of 7 hours to be described as an "Emergency Session".

   Saturdays from lunchtime up to midnight to constitute two "Emergency Sessions" and Sundays from 9.00 am. up to midnight, three "Emergency Sessions". Therefore in the normal working week, there will be 10 "Emergency Sessions". (Method of payment = £159.03* per Session.)

   *1A. Staff to work on a rota basis to provide an "On-Call Service" from midnight to 9.00 am. covering each night of the week. Payment during these periods to be on the basis of the existing "A" System (£14.06* per call) with half the existing Stand-by payments (Mon-Fri = £7.03*, Sat = £9.17*, Sun/PH = £13.68*).*

   *1B. Staff will not normally be rostered for an "Emergency Session" followed by a period of "On-Call".*

   *1C. During the periods of the "Emergency Sessions" and "On-Call", requests for Laboratory work will be confined to non-deferrable work. The scope of the work will be monitored by the Medical staff in the Laboratory and the referring Clinicians in collaboration with the Chief Technologists.*

2. In all laboratories or departments which would not merit the establishment of an "Emergency Session", the "On-Call" system covering outside normal working hours will operate as follows:

   In hospitals with up to 5 calls per week, payment to be made on the basis of the existing "B" system (£38.61* per call)

   For up to 60 calls per week per hospital, payment to be made on the basis of the existing "A" rate (£14.06* per call) and for over 60 calls per week, payment to be made at a reduced rate (£9.50* per call). Payment for emergency calls to be pooled to determine the average rate of an individual call in any given week. Existing Stand-By payment to continue (Mon-Fri = £14.06*, Sat = £18.36*, Sun/PH = £27.46*)

3. The extent of the workload to be used by Management in deciding the type of On-Call system to be operated in each institution.

4. Saturday morning service to continue as at present.

5. The number of rotas in any particular laboratory and the number of personnel participating on a rota, at the same time, to be determined by Management.

6. Access to all rotas to be open to all staff subject to being considered competent.

7. Review of the revised system to take place after one year in operation. Rates will be adjusted in line with standard increases for Medical Laboratory Technician/Technologists.

8. The parties to this agreement accept the commitment to provide an emergency service outside normal working hours.

9. Public Holidays to be treated in the same way as Sundays.

## 4. Extract from the Inbucon Report[20]

### Table 1: Percentage Increase in Workload between 1992 and 1997

Table 1 indicates a breakdown of workloads for 1992 and 1997 by specialization and according to hospital size. Respondents were requested to express workload figures, as appropriate, in specimens, blocks or case numbers. There were some discrepancies in the returns as figures for Cytology and Histology were expressed in Case Numbers or Blocks whereas figures for the other disciplines were expressed in Specimens. Additionally a number of hospitals measured workload in different units to those requested (e.g. samples, tests, patients) and in a small number of cases different workload unit measurements appeared to have been used in each of the review years involved.

### Tables 2&3: Daily Activity Patterns

Two sample weeks were identified and hospitals were asked to specify, as appropriate, the number of specimens, blocks or case numbers received during the different periods of the day. The analysis shows the distribution of the work load activity throughout the normal working day, during out of hours (Monday – Friday) and during Saturday and Sunday. Table 2 indicates the returns in respect of the first sample week, 12-18 May 1997, and Table 3 indicates the returns in respect of the second sample week, 10-16 November 1997. The results have been compiled according to hospital size and for ease of comparison the analysis is expressed in percentage terms.

### Table1: Percentage Increase in Workload between 1992 and 1997

| Small Hospitals | | | | |
|---|---|---|---|---|
| Specialisation | Code | 1992 | 1997 | % Increase |
| Microbiology | 1 | 5500 | 7550 | 37.27 |
| | 12 | 2367 | 3061 | 29.32 |
| | 17 | 1210 | 2352 | 94.38 |
| | 21 | 9602 | 13487 | 40.46 |
| | 25 | 4241 | 6211 | 46.45 |
| | 43 | 5600 | 9000 | 60.71 |
| | 45 | 6218 | 9621 | 54.73 |
| Blood Transfusion | 1 | 306 | 843 | 175.49 |
| | 17 | 500 | 502 | 0.40 |
| | 32 | 3150 | 4000 | 26.98 |
| | 33 | 1200 | 2190 | 82.5 |
| | 43 | 1010 | 1000 | -0.99 |
| | 45 | 676 | 548 | -18.93 |
| Coagulation | 17 | 4361 | 5074 | 16.35 |

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| Small Hospitals | | | | |
|---|---|---|---|---|
| Specialisation | Code | 1992 | 1997 | % Increase |
| | 33 | 2500 | 10400 | 316.00 |
| | 43 | 4000 | 13000 | 225.00 |
| Haematology | 1 | 8555 | 9950 | 16.31 |
| | 12 | 12782 | 18506 | 44.79 |
| | 17 | 16394 | 21796 | 32.95 |
| | 21 | 19300 | 25522 | 32.24 |
| | 25 | 2540 | 3496 | 37.64 |
| | 32 | 20897 | 27600 | 32.08 |
| | 33 | 14000 | 25000 | 78.57 |
| | 43 | 14000 | 29000 | 107.14 |
| | 45 | 16956 | 29691 | 75.11 |
| Biochemistry | 1 | 6500 | 8776 | 35.01 |
| | 12 | 90460 | 135985 | 50.33 |
| | 17 | 19379 | 29156 | 50.45 |
| | 21 | 13192 | 37316 | 183.87 |
| | 25 | 2356 | 4554 | 93.29 |
| | 32 | 16886 | 18660 | 10.51 |
| | 33 | 15000 | 36400 | 142.67 |
| | 43 | 20000 | 42000 | 110 |
| | 45 | 20322 | 27735 | 36.48 |
| TOTALS | 1 | 20861 | 27119 | 30.00 |
| | 12 | 105609 | 157553 | 49.19 |
| | 17 | 41844 | 58880 | 40.71 |
| | 21 | 433133 | 76325 | 76.22 |
| | 25 | 9137 | 14261 | 56.08 |
| | 32 | 40933 | 50260 | 22.79 |
| | 33 | 32700 | 73990 | 126.27 |
| | 43 | 44610 | 94000 | 110.72 |
| | 45 | 44172 | 67595 | 53.03 |
| | | | | 62.78 |

Table1: Percentage Increase in Workload between 1992 and 1997

| Medium Hospitals | | | | |
|---|---|---|---|---|
| Specialisation | Code | 1992 | 1997 | % Increase |
| Serology | 4 | 2720 | 5100 | 87.50 |
| | 20 | 3300 | 4400 | 33.33 |
| Microbiology | 3 | 29470 | 37899 | 28.60 |
| | 4 | 11100 | 17400 | 56.76 |
| | 5 | 25773 | 20221 | -21.54 |
| | 6 | 52278 | 69424 | 32.80 |
| | 9 | 37061 | 41610 | 12.27 |
| | 14 | 14065 | 22597 | 60.66 |
| | 16 | 32789 | 39400 | 20.16 |
| | 20 | 14851 | 19160 | 29.01 |
| | 23 | 23298 | 35694 | 53.21 |
| | 26 | 15198 | 21617 | 42.24 |
| | 29 | 32893 | 50999 | 55.05 |
| | 34 | 23422 | 27330 | 16.69 |
| | 35 | 23214 | 25719 | 10.79 |
| | 37 | 29540 | 28000 | -5.21 |
| | 38 | 17223 | 21834 | 26.77 |
| | 41 | 25206 | 28227 | 11.99 |
| Blood Transfusion | 3 | 5558 | 6126 | 10.22 |
| | 4 | 1120 | 1330 | 18.75 |
| | 9 | 3095 | 2573 | -16.87 |
| | 14 | 1581 | 2901 | 83.49 |
| | 15 | 79072 | 12880 | -83.71 |
| | 20 | 3581 | 4600 | 28.46 |
| | 23 | 4179 | 4180 | 0.02 |
| | 26 | 12418 | 14725 | 18.58 |
| | 29 | 5578 | 14565 | 161.12 |
| | | | | |

Medium Hospitals

| Specialisation | Code | 1992 | 1997 | % Increase |
|---|---|---|---|---|
| | 34 | 2169 | 2090 | -3.64 |
| | 35 | 15825 | 19413 | 22.67 |
| | 38 | 3636 | 3922 | 7.87 |
| | 41 | 16454 | 12568 | -23.62 |
| Coagulation | 3 | 5700 | 11045 | 93.77 |
| | 23 | 8339 | 19857 | 138.12 |
| | 34 | 893 | 1800 | 101.57 |
| | 37 | 765 | 1823 | 138.630 |
| Haematology | 3 | 55083 | 89473 | 62.43 |
| | 4 | 19700 | 30100 | 52.79 |
| | 9 | 150007 | 187012 | 24.67 |
| | 14 | 20265 | 39154 | 93.21 |
| | 16 | 43354 | 61542 | 41.95 |
| | 20 | 26500 | 36100 | 36.23 |
| | 23 | 46486 | 53670 | 15.45 |
| | 26 | 23048 | 28142 | 22.1 |
| | 29 | 31167 | 79095 | 153.78 |
| | 34 | 16454 | 15795 | -4.01 |
| | 35 | 31284 | 29701 - | 5.06 |
| | 37 | 14920 | 25502 | 70.92 |
| | 38 | 31321 | 42891 | 36.94 |
| | 41 | 59888 | 85042 | 42.00 |
| Cytology Gynae | 16 | 3260 | 4605 | 41.26 |
| | 20 | 1306 | 2600 | 99.08 |
| | 26 | 10345 | 11433 | 10.52 |
| | 29 | 6240 | 7393 | 18.48 |
| | 35 | 4916 | 13688 | 178.44 |
| | 37 | 11407 | 10021 | -12.15 |

| Medium Hospitals | | | | |
|---|---|---|---|---|
| Specialisation | Code | 1992 | 1997 | % Increase |
| Cytology Non-Gynae | 16 | 259 | 402 | 55.21 |
| | 20 | 40 | 50 | 25.00 |
| | 29 | 360 | 297 | -17.50 |
| Other | 4 | 8100 | 12300 | 51.85 |
| | 14 | 7671 | 27677 | 260.8 |
| | 29 | 2762 | 3009 | 8.94 |
| | 37 | 12530 | 12071 | -3.66 |
| | 34 | 69653 | 6494 | -9.68 |
| Histology | 6 | 2852 | 4300 | 50.77 |
| | 14 | 8776 | 12606 | 43.64 |
| | 16 | 4431 | 5771 | 30.24 |
| | 20 | 2570 | 5110 | 98.83 |
| | 23 | 3526 | 3575 | 1.39 |
| | 26 | 4524 | 5356 | 18.39 |
| | 29 | 3474 | 4167 | 19.95 |
| | 34 | 5003 | 6494 | 29.8 |
| | 35 | 21974 | 17928 | -18.41 |
| | 37 | 3920 | 4708 | 20.10 |
| | 41 | 7481 | 10339 | 39.01 |
| Immunology | 3 | 900 | 1900 | 111.11 |
| | 16 | 668 | 775 | 16.02 |
| Endocrinology | 3 | 19000 | 39814 | 109.55 |
| | 16 | 7333 | 6000 | -18.18 |
| | 35 | 3000 | 11237 | 274.57 |
| Biochemistry | 3 | 54534 | 104227 | 91.12 |
| | 4 | 18009 | 29800 | 65.47 |
| | 6 | 32369 | 46913 | 44.93 |
| | 14 | 23316 | 34400 | 47.54 |

Medium Hospitals

| Specialisation | Code | 1992 | 1997 | % Increase |
|---|---|---|---|---|
| | 15 | 587863 | 181563 | -69.11 |
| | 16 | 38797 | 61665 | 58.94 |
| | 20 | 31490 | 38100 | 24.96 |
| | 23 | 31965 | 47469 | 48.50 |
| | 26 | 14265 | 16045 | 12.48 |
| | 34 | 11339 | 18186 | 60.38 |
| | 35 | 11653 | 16154 | 38.63 |
| | 37 | 18360 | 26190 | 42.65 |
| | 38 | 31504 | 53579 | 70.07 |
| | 41 | 44515 | 75454 | 9.50 |
| TOTALS | 3 | 170245 | 290484 | 70.63 |
| | 4 | 60749 | 96030 | 58.08 |
| | 5 | 25773 | 20221 | -21.54 |
| | 6 | 87499 | 120637 | 37.87 |
| | 9 | 190163 | 231195 | 21.58 |
| | 14 | 75674 | 139335 | 84.13 |
| | 15 | 6666935 | 194443 | -70.85 |
| | 16 | 130891 | 180160 | 37.64 |
| | 20 | 82638 | 110120 | 33.26 |
| | 23 | 117793 | 164445 | 39.61 |
| | 26 | 79798 | 97318 | 21.96 |
| | 29 | 82474 | 159525 | 93.42 |
| | 34 | 128933 | 78189 | -39.36 |
| | 35 | 111866 | 133840 | 19.64 |
| | 37 | 91442 | 108315 | 18.45 |
| | 38 | 83684 | 122226 | 46.06 |
| | 41 | 153544 | 211690 | 37.87 |
| | | | | 28.73 |

Table1: Percentage Increase in Workload between 1992 and 1997

| Large Hospitals | | | | |
|---|---|---|---|---|
| Specialisation | Code | 1992 | 1997 | % Increase |
| Serology | 7 | 652 | 1249 | 91.56 |
| Virology | 42 | 2088 | 6278 | 200.67 |
| Microbiology | 7 | 46333 | 71913 | 55.21 |
| | 27 | 167075 | 238910 | 43.00 |
| | 30 | 163773 | 240895 | 47.09 |
| | 39 | 96242 | 122808 | 27.60 |
| | 40 | 155451 | 215324 | 38.52 |
| | 42 | 76186 | 152157 | 99.72 |
| Blood Transfusion | 7 | 10778 | 11452 | 6.25 |
| | 18 | 12612 | 15219 | 20.67 |
| | 27 | 25816 | 31508 | 22.05 |
| | 30 | 12042 | 16520 | 37.19 |
| | 39 | 11368 | 16763 | 47.46 |
| | 40 | 10962 | 19521 | 78.08 |
| | 42 | 7127 | 14470 | 103.03 |
| Coagulation | 7 | 25500 | 53000 | 107.84 |
| | 27 | 56331 | 115315 | 104.71 |
| | 30 | 22200 | 27593 | 24.29 |
| | 40 | 22503 | 43934 | 95.24 |
| Haematology | 7 | 121500 | 157000 | 29.22 |
| | 27 | 187727 | 266095 | 41.75 |
| | 30 | 194800 | 282000 | 44.76 |
| | 39 | 105777 | 158667 | 50.00 |
| | 40 | 106453 | 137028 | 28.72 |
| | 42 | 98170 | 165466 | 68.55 |
| Cytology Gynae | 18 | 5329 | 6349 | 19.14 |
| | 27 | 7338 | 8779 | 19.64 |

## Large Hospitals

| Specialisation | Code | 1992 | 1997 | % Increase |
|---|---|---|---|---|
| | 30 | 12427 | 18899 | 52.08 |
| | 7 | 5486 | 9359 | 70.60 |
| Cytology Non-Gynae | 18 | 1535 | 1340 | -12.70 |
| | 42 | 640 | 854 | 33.44 |
| Histology | 7 | 29513 | 37790 | 28.05 |
| | 18 | 18751 | 22459 | 19.77 |
| | 27 | 41076 | 53936 | 31.31 |
| | 30 | 16233 | 20523 | 26.43 |
| | 39 | 14000 | 22675 | 61.96 |
| | 40 | 6361 | 7460 | 17.28 |
| | 42 | 23186 | 30567 | 31.83 |
| Immunology | 7 | 15502 | 32887 | 112.15 |
| | 18 | 3278 | 4174 | 27.33 |
| | 27 | 23492 | 42150 | 79.42 |
| | 30 | 9343 | 38588 | 313.02 |
| | 40 | 8512 | 16237 | 90.75 |
| | 42 | 2258 | 5795 | 156.64 |
| Endocrinology | 7 | 15809 | 14945 | -5.47 |
| | 30 | 38000 | 108244 | 184.85 |
| | 39 | 40027 | 82232 | 105.44 |
| | 40 | 86251 | 150493 | 74.48 |
| Biochemistry | 7 | 169277 | 272647 | 61.07 |
| | 27 | 336027 | 422194 | 25.64 |
| | 30 | 241000 | 356225 | 47.81 |
| | 39 | 108529 | 167485 | 54.32 |
| | 40 | 1993877 | 1635092 | -17.99 |
| | 42 | 13441 | 258259 | 92.13 |
| Other | 7 | 47319 | 57112 | 20.70 |

Large Hospitals

| Specialisation | Code | 1992 | 1997 | % Increase |
|---|---|---|---|---|
| TOTALS | 7 | 487669 | 719354 | 47.51 |
| | 18 | 41505 | 49541 | 19.36 |
| | 27 | 844882 | 1178887 | 39.53 |
| | 30 | 709818 | 1109487 | 56.31 |
| | 39 | 375943 | 570630 | 51.79 |
| | 40 | 2390370 | 2225089 | -6.91 |
| | 42 | 344076 | 633846 | 84.22 |
| | | | | 41.69 |

Table 2: Daily Activity Patterns (Week 1: 12-18 May 1997)

Small Hospitals

| | 1 | 10 | 17 | 19 | 21 | 25 | 28 | 32 | 43 | 45 | Total Average |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | % | % | % | % | % | % | % | % | % | % | % |
| Normal | 93.8 | 67.0 | 92.5 | 70.8 | 94.7 | 98.0 | 91.0 | 75.0 | 100.0 | 82.50 | 86.50 |
| Out of Hours (Mon–Fri) | | 11.4 | 4.6 | 14.0 | 1.5 | | 3.8 | 16.3 | | 10.2 | 8.8 |
| Saturday | 3.8 | | 2.0 | 9.6 | 2.5 | 0.7 | 2.8 | 8.3 | | 3.7 | 4.2 |
| Sunday | 2.2 | 20.7 | 0.7 | 5.3 | 1.1 | 1.2 | 2.1 | | | 3.5 | 4.6 |

Table 2: Daily Activity Patterns (Week 1: 12-18 May 1997)

Medium Hospitals

| | 2 | 3 | 4 | 5 | 8 | 16 | 20 | 23 2 | 4 | 26 | 34 | 35 | 38 | 41 | Total Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | %%%%%%%%%%%%%% | | | | | % |
| Normal | 95.0 | 94.8 | 81.0 | 98.0 | 95.0 | 80.4 | 100.0 | 78.8 | 98.0 | 88.0 | 90.0 | 95.0 | 83.2 | 79.8 | 89.8 |
| Out of Hours (Mon–Fri) | 3.0 | 2.5 | 10.6 | | | 9.8 | | 8.4 | | 6.4 | 4.2 | 1.9 | 5.6 | 7.5 | 6.0 |
| Saturday | 1.0 | 1.2 | 4.4 | 2.0 | 4.2 | 5.1 | | 7.6 | 1.0 | 1.6 | 3.5 | 1.0 | 6.5 | 6.9 | 3.5 |
| Sunday | 1.0 | 1.4 | 3.7 | | 6.0 | 4.6 | | 5.1 | 1.0 | 3.7 | 2.1 | 1.9 | 4.5 | 5.6 | 3.4 |

Table 2: Daily Activity Patterns (Week 1: 12-18 May 1997)

Large Hospitals

| | 7 | 18 | 27 | 30 | 36 | 39 | 40 | 42 | Total Average |
|---|---|---|---|---|---|---|---|---|---|
| Total Average | % | % | % | % | % | % | % | % | % |
| Normal | 87.9 | 73.0 | 86.0 | 95.9 | 99.7 | 34.1 | 84.0 | 93.9 | 81.8 |
| Out of Hours (Mon–Fri) | 5.1 | 14.5 | 5.0 | 2.1 | 0.1 | 10.0 | 6.2 | 2.5 | 5.7 |
| Saturday | 3.9 | 5.8 | 5.4 | 1.0 | 0.0 | 16.9 | 3.8 | 2.5 | 4.9 |
| Sunday | 2.9 | 6.2 | 3.0 | 0.9 | 0.1 | 38.8 | 5.7 | 1.0 | 7.3 |

Table 3: Daily Activity Patterns (Week 2: 10-16 November 1997)

Small Hospitals

| | 1 | 10 | 17 | 19 | 21 | 25 | 28 | 32 | 43 | 45 | Total Average |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | % | % | % | % | % | % | % | % | % | % | % |
| Normal | 90.3 | 87.7 | 91.2 | 72.9 | 93.7 | 100 | 91.7 | 74 | 100 | 80 | 88.15 |
| Out of Hours (Mon–Fri) | 0.66 | | 1.7 | 17.3 | | | | 10 | | 7.6 | 7.45 |
| Saturday | 3.3 | 2.8 | 2.5 | 5.8 | 2.9 | | 2.7 | 9.2 | | 3.9 | 4.14 |
| Sunday | 0.8 | 2.9 | 2.4 | | 1.3 | | 2.7 | | | 2.5 | 2.1 |
| Public Holidays | 4.8 | 6.5 | 2 | 3.7 | 1.9 | | 2.8 | 6.6 | | 2 | 3.79 |

Table 3: Daily Activity Patterns (Week 2: 10-16 November 1997)

Medium Hospitals

| | 2 | 3 | 4 | 5 | 8 | 16 | 20 | 23 | 24 | 26 | 34 | 35 | 38 | 41 | Total Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | % | % | % | % | % | % | % |
| Normal | 92 | 93.1 | 76 | 90.7 | 100 | 88.2 | | 82.7 | 94 | 85.5 | 95 | 93.3 | 81.8 | 81.7 | 8.77 |
| Out of Hours (Mon–Fri) | 3.3 | 3 | 9.9 | | | 5.2 | | 4.4 | 1.9 | 6 | 2.1 | | 5.1 | 10.7 | 5.16 |
| Saturday | 1.3 | 2.3 | 4.2 | 3.7 | | 1.6 | | 3.8 | 1.3 | 2.08 | | 1.9 | 4.7 | 5.5 | 2.94 |
| Sunday | 0.9 | 1.47 | 3.6 | | | 2 | | 4.6 | 1.2 | 3 | 1.4 | 3.05 | 3.9 | 2.04 | 2.47 |
| Public Holidays | 2.2 | | 5.6 | 5.4 | | 2.7 | | 4.3 | 1.3 | 3.2 | 1.4 | 1.64 | 4.2 | | 3.19 |

Table 3: Daily Activity Patterns (Week 2: 10-16 November 1997)

| Large Hospitals | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 7 | 18 | 27 | 30 | 36 | 39 | 40 | 42 | Total Average |
| | % | % | % | % | % | % | % | % | % |
| Normal | 84.9 | 70 | 81.2 | 87.8 | 61.6 | 85.5 | 79.3 | 92.6 | 80.36 |
| Out of Hours (Mon–Fri) | 4.7 | 14.1 | 7.2 | 3.7 | 16 | 7.9 | 7.3 | 2.4 | 7.91 |
| Saturday | 3.8 | 7.4 | 4.8 | 2.2 | 4 | 2.6 | 4.7 | 4.4 | 4.24 |
| Sunday | 3 | 1.7 | 3.4 | 2.06 | 8.6 | 1.7 | 3.5 | 1.07 | 3.13 |
| Public Holidays | 3.5 | 6.1 | 3.16 | 4.07 | 8.9 | 2 | 4.9 | 1.3 | 4.24 |

## 5. 1983 Agreement regarding Recovery Time

### TIME-OFF ARRANGEMENTS

2.1 The following time-off arrangements will apply in respect of call-outs on nights prior to days on which the technician is rostered for duty:

2.1.1 Call-out between 12 mid-night and 2.00 am – the technician will not report for duty until 11.00 am on that day;

2.1.2 Call-out between 2.00 am and 7.00 am – the technician will not report for duty until normal starting time on the afternoon of that day.

2.2 When time-off arrangements which are superior to those at 2.1.1 and 2.1.2 above exist, these shall be maintained on a personal basis.

2.3 The introduction of these standardized arrangements as at 2.1.1 and 2.1.2 above will not give rise to requests for additional staffing and/or have an adverse impact on the level of service provided.

2.4 The time-off arrangements at 2.1.1 and 2.1.2 above will not apply in some smaller hospital laboratories as determined by Management.

## 6. Near Patient Testing Discussion Document

Near Patient Testing (NPT) is the term used to refer to the performance of certain laboratory investigations outside the traditional central laboratory setting. NPT may be applied within the hospital structure e.g. General Wards, Intensive Care Units, Coronary Care Units, Operating Theatres, Accident & Emergency Units and Outpatient Departments. In its widest application it can be applied to self testing by patients, testing in GP's surgery and roadside testing. While not exclusively confined to Biochemical and Haematological analyses, NPT has to date, had its biggest impact in these specialties.

NPT offers an alternative to testing in the central laboratory and may be operated in the form of a 'satellite' laboratory, staffed by qualified laboratory scientists responsible to the Chief Laboratory Scientist. Alternatively, it may comprise analysers ranging from hand held to full size situated throughout the hospital and operated by non-laboratory staff. When used in appropriate circumstances by adequately trained staff NPT may offer considerable advantage to both patient and clinician. However, inappropriate use can adversely effect patients and is not cost effective.

Currently, both the College of American Pathologists (CAP) and the Clinical Pathology Accreditation (CPA) Schemes require that NPT be under the direction and responsibility of the appropriate Pathology Departments. The CPA Accreditation Handbook goes further by producing guidelines developed by the Joint Working Group on Quality Assurance stating that 'Equipment must be ordered in collaboration with the professional head of the appropriate laboratory department to ensure satisfactory standards of performance and safety'. It further states that 'laboratory staff should take responsibility for the near patient service in a manner agreed between the Heads of the appropriate laboratory and clinical services and directorates'.

In most hospitals, NPT has developed in a haphazard and unstructured manner. The Joint Group recognises the benefits of NPT provided it is introduced into the hospital setting in a co-ordinated and structured manner. However, prior to its introduction, it must be ascertained that NPT is the preferred option.

## Issues which need to be considered pre-introduction of NPT

### Quicker Turnaround Time

There are three main stages in the laboratory investigation process – pre-analytical, analytical and post-analytical.

The pre-analytical stage of any laboratory investigation begins when a clinician decides that a particular investigative procedure is necessary. The clinician may wish to confirm or eliminate the presence of a particular clinical condition or s/he may need to monitor the effect of treatment of an already diagnosed condition. Decisions must be made as to the appropriate test, the optimum timing and method of sample collection, and appropriate sample preservation, storage and transportation procedures. The pre-analytical stage of the laboratory investigation process ends when the sample and the request form are received in the laboratory.

The analytical stage begins when the sample and request form are received in the Laboratory and ends when the analysis of the sample has been completed. Patient details and sample container must be checked carefully. This is a critical stage in the process – any mix-ups must be brought to the attention of the requesting clinician so as to avoid assigning results to the wrong patient. The sample must be analysed using appropriate methodologies and techniques in a cost-effective manner. All instrumentation must be properly maintained and its performance regularly assessed. Stringent quality control and quality assurance measures must be in place and must be followed rigorously to ensure accurate and precise results. Anomalous results are detected and follow-up investigations conducted.

The post-analytical stage of the laboratory investigation begins when a report is generated and ends when the report has been returned to the requesting clinician. The report provides appropriate reference ranges and may include other interpretive comments. The results must be made available in a timely manner.

In practice all three stages of the laboratory investigation occur simultaneously in a closely integrated cycle, at all hours of the day. The College of American Pathologists has shown that pre- and post-analytical elements of the turnaround time constitute the greater parts of delays in the laboratory investigation process.

## Alternatives to NPT

The following are some examples of alternatives to NPT which should be considered before the introduction of NPT:

- To improve sample delivery services, e.g.
  - *To have dedicated porters collecting and delivering samples and request forms, or*
  - *To have pneumatic systems to perform this task.*
- To prioritise analysis of urgent samples in the central laboratory.
- To have on-line computer ordering and reporting of tests or to ensure optimum benefit from such systems where they are in operation.

## Cost Effectiveness[i],[ii]

Some studies have shown that a two-to-seven fold increase can be expected in the cost of NPT when compared with central testing.[iii]

This increase must be balanced against the costs of extended stays in a high dependency unit and benefits to patient.

### Convenience

NPT can improve patient satisfaction as there is a shorter waiting time for test results.

These are some of the issues which must be considered prior to the introduction of NPT. Scientists, Laboratory Consultants and Hospital Administrators must review current practice to ascertain if the service can be improved within the established structures. If it is decided to introduce NPT a consultative process involving all stakeholders must be conducted. The contribution of all interested parties must be considered to determine the most suitable form and use of the NPT equipment.

i *Winkleman, J.W. and Wybenga, D.R. Qualification of Medical and Operational Factors determining Central versus Satellite Laboratory Testing of Blood Gases. Am. J. Clin. Pathol. 1994; 102: 7-10.*

*ii* *Winkleman, J.W., Wybenga, and Tanasijevic, M.J. The Fiscal Consequences of Central vs Distributed Testing of Glucose. Clin. Chem. 1994; 40 (8), 1628-1630.*

*iii* *Craig, T.M. The economics of near patient testing. In: Clinical Biochemistry Nearer the Patient. Marks V, Alberti KGMM, eds. Edinburgh, Churchill Livingstone, 1985; 162-167.*

## NPT preferred option

If NPT is deemed the preferred option, the role of the Chief Technologist and the laboratory personnel is central to the successful introduction of a reliable service. The following guidelines should be followed:

- Select equipment to give results compatible with those from the central laboratory.
- Evaluate equipment – run in parallel with central equipment.
- Train laboratory staff in use of equipment and for training of non-laboratory personnel.
- Plan appropriate training course for non-laboratory personnel to cover all areas of use including troubleshooting, quality control, safe handling of specimens and decontamination after use.
- Organise and provide tutors for courses for all personnel using the equipment including night duty staff and reorganise as required to accommodate new staff.
- Establish Health and Safety procedures.
- Prepare Standard Operating procedures.
- Establish procedures for satisfactory recording of data.
- Establish a reliable Quality Control scheme.
- Interface NPT analysers to central laboratory to ensure constant evaluation within the overall patient record.
- Consider budgetary implications, including staffing and consumables.

# Maintenance

Subsequent to the introduction of NPT the Chief Technologist is responsible for:

- daily maintenance of all NPT equipment
- ensuring procedures are adhered to
- evaluation of Quality Control results
- troubleshooting.

# Conclusion

The Group recognised the potential benefits of NPT while recognising also that, having regard to a range of issues previously outlined, it may not be a preferred option in all circumstances. Its introduction or expansion has budgetary implications and, as a matter of good management practice, the Laboratory Consultant and Chief Medical Laboratory Scientist should always be involved prior to decisions being made. Overall responsibility for managing NPT should rest with the Pathology Department.

## 7. Medical Laboratory Assistants Job Description

### General

- The person shall be trained on-site in the required duties by local personnel.
- The hours are 39 hour/week, with flexibility (regarding actual hours worked) to suit local work practices and demands.
- The appointee will be required to rotate through all sections of the laboratory as defined by the local management.
- The appointee may be required to work within the hospital or its affiliated institutions from time to time.
- The appointee will be required to maintain confidentiality regarding patient information and other hospital data.
- A good general education will be required to at least Junior Certificate standard.

### Assisting Role in the Laboratory

- Assist laboratory staff with the preparation work for tests.
- Prepare equipment, culture media and reagents as directed by appropriate scientific/ technical laboratory staff.

### Specimen Handling

- Receive and record specimens, ensuring that samples and request forms are correctly matched.
- Use of centrifuge and separation equipment to separate serum, etc.
- File and store samples as required and maintain records.

### General Laboratory Work

- Collection, delivery, sterilising and washing glassware.
- Dispatch of blood and other samples as required.
- Collection and delivery of specimens, reports and samples throughout the hospital as required.
- Preparing, collecting and disposing of all laboratory waste, excess tissue, etc.
- Cleaning of laboratory and laboratory equipment as required, including the de-icing of freezers, etc.
- Monitoring of supplies stocks. Reporting stock shortages to senior laboratory staff and requesting stocks as appropriate.
- Assisting with filing specimens, slides, etc.
- Taking, recording and delivering phone messages as required.

### Data Entry/IT Related Duties

- Basic use of mainframe computers and recording of data on the laboratory/hospital computer system to include: patient data entry; production of bar-coded labels; preparation of worksheets, etc.

### Other Duties

- Assisting with the compliance of safety precautions against fire, accidents and other hazards.
- Helping in security of laboratory premises.
- Other appropriate duties as may be assigned from time to time by the hospital.