

Area Laboratory Service

JOB DESCRIPTION

| 1. JOB IDENTIFICATION | |
|------------------------------|---------------------------------------|
| Job Title: | Biomedical Scientist (Specialist) |
| Reports to: | Team Manager |
| Department | Blood Sciences |
| Directorate: | Clinical Support Division |
| Job Reference | SSCLSSRAIGBLSC01 |
| No. of job holders: | |
| Last Update : | Monday 12 th November 2018 |

| 2. JOB PURPOSE |
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| <ul style="list-style-type: none"> • To be an integral part of the staff rotation throughout the Blood Sciences Department taking in either the haematology or biochemistry disciplines in order to provide a daily routine service. • To ensure the efficient and effective delivery of a high quality blood science service, as assessed by internal and external audit review. • To be responsible for his/her own work and use specialist skills developed through continual training to operate complex equipment and solve problems which may arise. • To act as mentor for, help supervise and train less experienced Biomedical Scientists, Medical Laboratory Assistants and undergraduate students. • To participate in the provision of the out of hours service (24/7/365). • To maintain the level of competence required by the Health and Care Professions Council. • To provide specialist advice to clinicians as to appropriateness of tests and timescales. |

3. DIMENSIONS

The post is based in Inverness at Raigmore Hospital as part of the Highland Area Laboratory Service. The laboratory provides an analytical, interpretative and advisory service to the population which is in the region of 235,000. The combined workload for Blood Sciences area laboratory is approaching 430,000 requests (3.5 million tests) on all three sites per annum. About 60% of requests come from primary care.

Common methods and equipment are utilised on all three sites. Lesser requested tests and some specialist work are provided at Raigmore Hospital in Inverness.

The Blood Sciences Department is accredited by UKAS to ISO15189 as a single area laboratory service (inclusive of all three hospital laboratories).

The department is subject to Quality Improvement Scotland scrutiny.

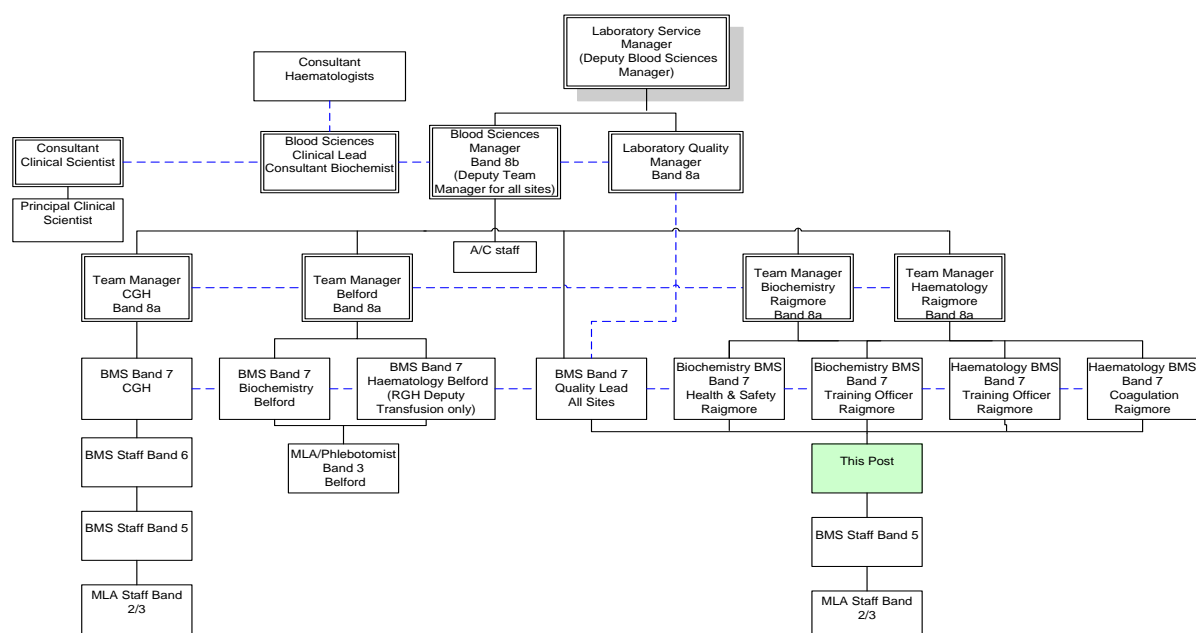
The area laboratory operational budget is approximately £4.2 million.

The laboratory is a Haemophilia Reference Centre and a tertiary reference centre for the north of Scotland, specialist tests being undertaken at Raigmore Hospital.

A resident out of hours service operates at Raigmore Hospital, Belford and Caithness Hospitals having an on-call service out of hours.

The department is also responsible for monitoring and maintenance of point of care testing equipment.

4. ORGANISATIONAL POSITION



5. ROLE OF DEPARTMENT

- The department carries out a comprehensive range of effective, high quality diagnostic services and also provides clinical and professional advice to clinicians, hospital departments, regional hospitals and satellite laboratories, general and dental practitioners and outside agencies. The department is a tertiary referral centre for other laboratories in the North of Scotland and a Haemophilia Centre.
- Emergency samples are 'fast tracked' including all samples from SCBU, A&E, ITU, Paediatrics, Coronary Care Unit, MHDU and SHDU. The department is operational 24 hours a day for emergency work. This requires staff to be competent to work out of hours to provide results and information for users of the service, troubleshoot problems and provide solutions.
- The majority of analyses are performed on complex automated analysers, however skilled manual techniques are also employed.
- The laboratory has accreditation through UKAS and works towards keeping the standards set

by this body.

- Departmental consultants provide clinical resources and advice for other clinicians, GP's, regional hospitals and satellite laboratories. Haematology consultants also hold outpatient clinics in addition to the above.

The department is divided into six operational sections:

1. Specimen Reception. All patient samples and request forms are checked, given a unique barcode number and prepared for analysis. The test requests and patient details are entered into the laboratory computer system. Specimens are prepared for despatch to Specialist Reference Laboratories.
2. Track equipment: The majority of the work is loaded onto the automated track which directs samples to full blood count, general biochemistry, and immunoassay analysers as appropriate.
3. Film reporting: Examination of blood films using a microscope, red blood cell abnormalities, white cell abnormalities (e.g. Leukaemia), platelet abnormalities, detection and identification of Malarial parasites/microfilariae and suggesting further investigations.
4. Coagulation: Identifying coagulation abnormalities (e.g. Thrombophilias, Haemophilias) and monitoring of anticoagulant treatment (e.g. Warfarin and Heparin). Specialist coagulation tests: Lupus Anticoagulant, Thrombophilia, Low Molecular Weight Heparin, von Willebrand screening. Intrinsic and Extrinsic Factor Assay, Inhibitor Screens/Assays, are a requirement in the department's role as a Haemophilia Centre.
5. Semi-automated and manual: Tests in this area involve using a variety of equipment including HPLC for HbA1c and haemoglobinopathy screens, spectrometry for xanthochromia and G6PD assays, micro-diffusion plate technology for β_2 Micro globulin, osmometry, and plasma viscometry.
6. Point of Care Testing (POCT). The department is responsible for Point of Care Testing equipment performing laboratory tests for the INR clinics, glucose meters and blood gas analysers on various wards and in clinics.

Quality

The department aims to raise quality standards, promote the concepts of continuous improvement, customer satisfaction and team working, always in compliance with the requirements of regulatory and accreditation bodies. This incorporates internal quality control, external quality assurance and internal audit programs.

Training

The department is an IBMS approved training centre and the department's staff assist and support the above functions in the identification of training needs and the delivery of an effective training programme. The staff participate in continuing professional development, key-performance indicator development and data collection and the knowledge and skills framework.

Microsoft Word and PowerPoint are used to prepare training material and presentations.

Projects

The department's staff assist and support research and development projects within the hospital and outside agencies.

6. MAIN TASKS, DUTIES AND RESPONSIBILITIES

Operational

1. Contributes to the delivery of daily operational aspects of the department ensuring compliance with scientific standards in order to deliver service within required time-scales ensuring departmental targets are achieved within a team-working environment.
2. Plan and prioritise own workload and that of any trainee or support staff within a section.
3. The post holder is expected to be participate in all sections within their discipline (biochemistry or haematology) either as part of a team or working individually.
4. Analyse samples submitted for investigation using a large number of complex automated and semi-automated analysers. The post holder is responsible for the daily setup and maintenance procedures on equipment for themselves and other users. This involves ensuring all maintenance procedures are performed and all calibration and subsequent quality control analyses are acceptable prior to patient sample analysis. This involves assessment of many points of complex data to ensure all results are technically validated before being available to clinicians.
5. The post holder is also responsible for first line maintenance, repair, and technical fault finding of equipment. He/she will decide when it is appropriate to refer unexplained results or other problems to the section lead or manager. The post holder may be required to contact equipment engineers and act on advice for more complex analyser failures. The post holder may instigate an unplanned service call if required.
6. To prioritise investigations according to the clinical need and optimising turn-around time for urgent requests.
7. Plan and prioritise their own workload, co-ordinate other staff, liaise with other departments and agencies in relation to tests and services required and that of any trainee or support staff within a section.
8. Participate in the shift pattern required to deliver the service. This service requires staff to work for a period of 12 hours with enhanced responsibility. To cover additional out of hours work,

sometimes at very short notice if colleagues are sick or absent. They manage and prioritise work their work with no direct supervision.

9. To undertake analysis of blood and other body fluids in compliance with Departmental Standard Operating Procedures and to assess the suitability and appropriateness of samples received.
10. To perform precise and accurate analytical assays using highly developed manual skills that require a high level of hand to eye co-ordination and concentration.
11. Communicate authorised results over the telephone to doctors, consultants, GP's, nursing staff and any other authorised personnel. Telephone abnormal results to requesting clinicians and refer grossly abnormal results to the duty laboratory consultant.
12. Ensure that the technical work areas are kept clean and tidy. Clean and disinfect instruments and equipment.
13. Participate in the point of care testing work which will include maintaining, troubleshooting and repair of equipment. Provide technical advice to staff in wards and other units with regard to point of care testing.

Quality

14. Work in accordance with local and national policies and procedures relevant to the work area. This includes Standard Operating Procedures (SOP's), Quality Management Policy, internal quality control and external Quality Assessment, Health and Safety Policies including current data protection legislation.
15. Validate and interpret clinical laboratory results that may be incomplete, complex or conflicting. Issuing reports/results to users e.g. clinicians. Using their comprehensive knowledge and understanding across the range of procedures and practice in order to interpret results, initiate relevant follow up investigations, adding approved technical and clinically relevant comments and decide on any further course of action deemed necessary using laboratory protocols and developed skills. Refer to a more senior BMS, clinical scientist or consultant when appropriate.
16. Perform quality control assessments to ensure all results are technically accurate before validation of results and make judgements on how to proceed making technical decisions relating to the analysis of anomalous results, e.g. identifying and initiating any supplementary or confirmatory tests.
17. Contribute to continual review of working methods and service provided by the department, identifying any problem areas/causes for concern and bringing forward suggestions for improvement.
18. Write, review and update Standard Operating Procedures in the department. Ensure that records are kept up-to-date and stored safely to ensure compliance with good working practices required for the standards of the United Kingdom Accreditation Service (UKAS)
19. Be fully involved in the Quality Management System to achieve and maintain accreditation. This will involve writing SOP's and undertaking internal audit.

20. To ensure compliance with all local and national standards of work practise e.g. UKAS
21. Participate in the evaluation and the implementation of new equipment and analytical procedures.

Training

22. The post holder is required to have knowledge and skill to be able to perform and report the results of specialist complex laboratory tests. This necessitates continuous training and updating of technical expertise and knowledge to ensure that the post holder can confidently analyse and report these more specialist tests. This is achieved by a combination of external training courses, in-house training and constant dissemination of knowledge throughout the staff group.
23. Participates in the training of MLA and support staff in the techniques, instrumentation and work assignment of all aspects within the laboratory and act as a mentor to junior scientific and support staff.
24. Participate in programmes of education and training including internal and external quality assurance schemes. Attend department staff meetings as required.
25. Participate in Continuing Professional Development to maintain HCPC registration and ensure scientific and technical knowledge is current.
26. Be fully involved in their Personal Development Planning and review process, including participation in the knowledge and skills framework (Turas) process.
27. Attend instrument training courses and user group meetings.

General

28. Produce labels, worksheets and reports for all aspects of the department. Maintain adequate stocks of reagents and consumables.
29. Participate in Health and Safety activities. Carry out Risk Assessments and ensure appropriate action is taken.
30. Refer work to other hospitals/laboratories, ensuring adequate records are taken and maintained, liaising with service providers as necessary.
31. Participate in the development of new techniques and processes.
32. To demonstrate a positive attitude to the work of the department, colleagues and service users. Respond to requests for help and information in a polite, positive and concise manner.
33. Maintain patient confidentiality at all times.
34. Assist in the processing and storage of samples for medical trials/research.

The post holder will spend approximately 85% of their time performing professional and scientific duties, 10% on Quality Control and Quality Management and 5% on supervision and training.

7a. EQUIPMENT AND MACHINERY

Various complex analytical equipment is utilised in the laboratory for which comprehensive training

and knowledge is required for competence, before the post holder can take responsibility for the equipment.

The post holder is personally responsible for the safe use and maintenance of a range of extremely expensive, highly complex equipment. Constantly changing technology means that analysers will be progressively upgraded/superseded but currently include the following.

- Siemens sample track system linking the following analysers together; 2 x Advia 2120 blood count analysers, 2 x Advia 2400 Chemistry analysers, 2 x Centaur XP Immunoassay and 1 x Immulite 2000XPi Immunoassay analyser.
- Stand-alone Abbott Architect Immunoassay analyser.
- Tosoh G8 HPLC system.
- Stand-alone full blood count analyser with slide-maker/stainer
- Two stand-alone coagulation analysers
- Plasma Viscometer
- Sarstedt recapper
- Osmometer
- Spectrophotometer
- Microscopes - Light and Fluorescence.
- Point of Care equipment principally includes glucose meters, coagulation meters and blood gas analysers.

Examples of other standard laboratory equipment which are utilised without the requirement for specialist training by the post-holder and other members of staff in some instances under supervision.

- Electronic analytical balance.
- Universal Centrifuges.
- Pipettes (Positive Displacement and Digital).
- pH meter.
- Fridges and Freezers.
- Pneumatic tube systems.
- Barcode printer.
- Time and date stamp.
- Printers and photocopier.

7b. SYSTEMS

Operate the laboratory information system in accordance with departmental protocols.

This includes:

- Entering patient demographics and clinical details onto database.
- Reviewing and validating patient results.
- Manually entering patient results.
- Producing work lists.
- Checking for completion of work.

Computer systems are an integral part of the laboratory service and are used on a continual basis.

Examples of these are:

- Laboratory information management system (LIMS) to record patient demographics, sample and result details.
- Middleware that links equipment enabling patient, sample and test data to be transferred from and back into the LIMS. There are different forms of middleware according to the equipment used.
- Equipment software that controls the function and operation of each analyser. For the larger pieces of equipment these are complex software packages that require comprehensive understanding of their operation.
- Communication of information between managers and staff is regularly disseminated by email.

8. ASSIGNMENT AND REVIEW OF WORK

The post holder works within their relevant discipline (biochemistry or haematology) working as part of a team or working individually.

- The post holder is guided by SOPs, technical manuals, national guidelines and good laboratory practice.
- They are managed by team leaders (senior Biomedical Scientists) and work for long periods unsupervised.
- Formal objectives are set, agreed and reviewed annually.
- Operates independently in any section of the department but, through experience and knowledge of Professional Standards, can decide when it is appropriate to refer unexplained results or other problems to a more senior Biomedical Scientist or Consultant.
- Plans his/her duties to appropriately handle a workload that is demand lead. They will be expected to use their initiative to prioritise workload, guided by turnaround times stated in the departmental handbook.

- The post holder will be asked to participate in specific projects.
- Personal development planning is assessed on an annual basis.

Work comes from the following sources:

- Line managers / departmental head.
- Hospital doctors / specialists, general and dental practitioners.
- Other regional hospitals.
- Self generated.
- Occasional processing of samples for medical research trials for outside agencies R&D

The post holder will participate in laboratory meetings, specialist groups (H&S, Scientific meetings etc.) where planning will be discussed.

Planned routine

- Constitutes the greater part of the work. The team managers organise the work in liaison with the head of service and set timescales and standards. On a day-to-day basis, the team leaders are responsible for the work of the department.
- If considered appropriate the post holder will advise the team leader of any problems which arise.
- The nature of the work is mainly predictable, however problems may be encountered which are unexpected or unforeseen. The post holder will normally attempt to resolve these problems using their own initiative, and will suggest alternative plans of action if this is not possible.

Unplanned or ad hoc

- Unplanned or ad hoc work relates to cancellation of planned activity e.g. failure of an analyser or computer system. The post holder will advise the team leader or team manager as appropriate when an ad hoc situation occurs. On occasion, unplanned specialist tests are urgently required/requested. Because of the inherently unpredictable nature of the medical conditions identified, the post holder must be able to rapidly change priorities to suit the workload.
- Point of care testing equipment troubleshooting and occasional testing on this equipment may be required at short notice.

Out of hours

The out of hours service is covered by two Biomedical Scientists, one from Biochemistry and one from Haematology. This service requires staff to perform autonomous working within their discipline and to maintain an exceptionally high standard.

- The post holder is solely responsible for the prioritisation, organisation and authorisation of work. They are responsible for using their technical/scientific experience and knowledge in notifying appropriate medical personnel of grossly abnormal results or untoward incidents.

- Following departmental policies and utilising their scientific and technical experience and knowledge, they will alert clinicians of any abnormal results which may be harmful to the patient.
- Out of hours the post holder has significant discretion to work; they must prioritise workload, meet turn around times and deal with unexpected technical and clinical emergencies. At these times they are responsible for all aspects of the laboratory operation. They will be expected to independently make important decisions and judgements in the course of a work session.

9. DECISIONS AND JUDGEMENTS

- Follows laboratory procedures and standard operating procedures (SOPs) and may assist in the writing of these by following departmental policy.
- Follows all related hospital policies and procedures.
- The post holder must maintain competence after training to use equipment and reagents and has the discretion to try and resolve problems with instruments/analyses if in their judgement the problem can be resolved without involving senior staff.
- To undertake preliminary fault finding when quality control results indicate a loss of performance by evaluating a number of points of information including, calibration reports, calibrator, quality control and reagent batch numbers and system checks and advise senior members of staff of any unresolved situation.
- To undertake method and laboratory instrument evaluation.
- The post holder is responsible for the organisation and prioritisation of work especially with regard to urgent samples.
- The post holder is responsible for the daily setup and maintenance procedures including the evaluation of quality control results on equipment for other members of staff to use on following shifts.
- The post holder has the discretion to use their specialist knowledge, skills and experience to initiate other laboratory investigations depending upon patient results. Through experience and knowledge of professional standards and laboratory procedures can decide when it is appropriate to refer difficult issues to a more senior member of staff.
- The post holder is responsible for maintaining stock control records and highlight deficiency when they occur for the re-ordering of supplies.
- Deals with technical enquiries from trainee Biomedical Scientists, newly qualified staff and support staff e.g. sample suitability, anomalous results, analyser problems, authorise results generated by other junior staff.

- Is competent in interpreting complex diagnostic test data in a variety of formats and ensuring the results of these investigations are reported and conveyed to clinical staff by telephoning urgent and abnormal results. If necessary request additional clinical information from medical staff to assist in interpretation of results or ask for repeat sample when results may be anomalous.
- Technically validates and authorises clinical laboratory results, issuing reports to service users e.g. clinicians. Recommending further tests/actions when required with referral to a more senior Biomedical Scientist, clinical scientist or consultant as appropriate.
- Must have at least 2 years post-registration knowledge through experience, to work autonomously for extended periods of time, particularly in performing specialist tests.

10. MOST CHALLENGING/DIFFICULT PARTS OF THE JOB

- Prolonged concentration during specialist analytical processes.
- To maintain and develop the knowledge, skills and competence to practice in a rapidly changing area of laboratory medicine.
- The challenge of managing the various tasks involved in the out-of-hours service while working autonomously.
- Response during a major incident.

11. COMMUNICATIONS AND RELATIONSHIPS

- Frequently providing an explanation of laboratory information varying from routine to highly complex, to senior laboratory staff, clinicians and other users, and may recommend further tests/actions required or advice on suitability of tests and outcomes in line with departmental policy.
- To provide, receive and deal with complex sensitive information from request forms and telephone calls from GP's and ward staff.
- Frequently receives information from senior laboratory staff, clinicians and other users varying from routine to highly complex. This information may require interpretation, analysis and further action.
- Communicates clearly and concisely with laboratory consultants, clinical scientists, laboratory managers, team leaders, Biomedical Scientists, Medical Laboratory Assistants and administration staff on a regular basis.
- Frequently notifies relevant staff of clinically significant results, results out with reference

ranges and anomalous results and use persuasive skills to influence clinicians, in light of the post holder interpretation of these results, to initiate further testing when appropriate.

- On a daily basis communicates with other internal staff groups including clinicians, nurses, colleagues from other laboratory disciplines, IT personnel, clerical staff, porters and estates staff.
- Regularly communicates with external staff groups including doctors, nurses and reception staff in GP practices.
- To use tact and persuasive skills when dealing with medical staff over contentious issues i.e. non-compliant samples not being analysed.
- To provide explanation and reassurance to patients and their relatives who come to the department for point of care tests, who may be distressed or anxious, especially young children.
- Communicate with technical support engineers to expedite first line fault finding to remedy faults on any of the equipment.
- Ultimately accountable through the Blood Sciences Manager to the Head of Service.

Communication will be in the form of oral, face-to-face or electronic interactions.

12. PHYSICAL, MENTAL, EMOTIONAL AND ENVIRONMENTAL DEMANDS OF THE JOB

Working Conditions

Adverse working conditions for Biomedical Scientists include:

- Working for periods in 4°C cold rooms filing samples for storage and retrieval for reflex testing and replenishing reagent stock and stock control.
- Continual use of VDU's.
- Direct contact with untested blood samples.
- Handling biohazard samples known to be "High Risk" e.g. HIV, Hepatitis B or Hepatitis C positive
- Working with a variety of hazardous chemicals.

Physical Skills

- Accuracy and precision is of utmost importance due to the manual nature of some of the tests using pipettes and other equipment.
- Manual dexterity and good hand eye co-ordination for the use of computer and associated devices (keyboard, mouse, touch-screen and barcode wand), handling small paediatric blood samples, handling of small components when performing analyser maintenance, using micro pipettes to measure small volumes of sample, preparing blood/marrow slides and the examination of blood films where fine adjustments are required when using microscopes,

weighing small amounts of chemicals using a fine electronic balance.

- Keyboard skills are required throughout the department from typing patient demographics into the laboratory information system and using Microsoft Office applications to write Standard Operating Procedures and also in the generation of worksheets.

Physical Effort

- Long periods sitting or standing in a restricted position at workstation dependent upon which section the post holder is working.
- Repetitive tasks such as uncapping and capping of blood samples, attaching bar-coded numbers to samples and forms, computer data input, opening and unpacking of large numbers of samples and pipetting of samples.
- Some physical lifting and carrying required e.g. bulk reagents, waste containers and orange waste bags that are heavy and require frequent changing. The waste containers weigh approximately 14 kg and the reagent containers in the region of 10 kg.
- Participation in the out of hours rota, which involves autonomous working, unsocial hours, and unpredictable work patterns.

Mental Effort

- A high level of concentration is used at all times due to the importance of the tests being performed and their direct implications for patient management.
- There is a frequent requirement for intense concentration within the work period. The requirement is unpredictable within the shift.
- Mental demands are related to concentration needed when using for example a microscope to report on blood films, or interpretation of chromatograms. Frequent interruptions are encountered due to telephone calls, requests for urgent samples and dealing with enquires. This nature of working is an integral part of the job.

Emotional Effort

- The post holder is often under extreme pressure to produce results for urgent samples whilst coping with other interruptions.
- The urgent and unpredictable nature of work out of hours increases emotional demands.
- There is a requirement to prioritise urgent samples when working out of hours.
- Dealing with telephone enquiries for results in clinically stressful situations.
- Frequent exposure to distressing or emotional circumstances, e.g. being informed of a patient's death especially of leukaemia patients, some of whom are young individuals, who have been seen on a regular basis.
- Emotional demands of the job consist of dealing with ill and/or distressed patients on a regular basis.

- Occasional exposure to verbal aggression.

13. KNOWLEDGE, TRAINING AND EXPERIENCE REQUIRED TO DO THE JOB

- The post holder must be state registered with the Health and Care Professions Council and must retain registration with that body.
- Current post-holders must have an honours degree in Biomedical Science or equivalent, which is accredited by the Health Professions Council. At least 2 Years experience working in the relevant single discipline (haematology or biochemistry) or in a combined blood sciences department.
- Institute of Biomedical Science Biomedical Science Diploma or Specialist Portfolio in the relevant single discipline (haematology or biochemistry) or an equivalent qualification.
- All new registrants must possess an honours degree acceptable to the HCPC and elevation to Specialist Biomedical Scientist is only following a period of specialist training, lasting not less than two years, developing their role. The training will be a mixture of in-service specialist training and formal training appropriate to postgraduate level, gaining experience of working as Specialist Biomedical Scientist in the discipline.
- After suitable training they must maintain their specialist knowledge across a range of work procedures and practices, which must be underpinned by theoretical knowledge of relevant practical experience to a level which allows the post-holder to practice without guidance or supervision. This knowledge and experience also enables the post-holder to work autonomously as part of the out of hours service.
- The post holder must undertake continuous professional development and will maintain an active CPD Portfolio which may be audited and develop specialist skills and knowledge in order to contribute to the continuous improvement of the service.
- Attendance at in-house tutorials/lectures.
- Attendance at short courses:
 - EQA scientific meetings
 - Instrument Training Courses.
 - Risk Assessment, COSHH training, Violence and Aggression, Fire Lectures etc.
- Knowledge of COSHH legislation, risk assessments, Data Protection Act, fire regulations and board policies.
- Be IT literate as most instruments employ a variety of computer systems and a firm grasp of Microsoft Office for the production of Standard Operating Procedures, worksheets and presentations.

14. JOB DESCRIPTION AGREEMENT

I agree that the above Job Description is an accurate reflection of my duties and responsibilities at the date of signing.

Job Holder's Signature:

Manager's Signature:

Date:

Date: