#### Form JE 5



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| 1. JOB IDENTIFICATION |
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| Job Title:  | Biomedical Scientist (BMS) - Specialist |
| Responsible to: | Associate Service Manager |
| Department(s): | Microbiology |
| Directorate: | Diagnostics |
| Operating Division: | Access & assurance  |
| Job Reference: | **SCO6-3141(rev25)** |
| No of Job Holders: | 27 |

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| 2. JOB PURPOSE |
| * To perform the specialist, scientific and technical microbiology lab work required for the provision of a high-quality diagnostic service in a competent and safe manner.
* To provide advisory services to aid patient diagnosis, monitoring and treatment including information on investigations.
* To undertake work in specialist diagnostic, research and development functions using manual and automated techniques.
* To provide training, supervision and mentorship to more junior staff including Junior Medical staff.
* To provide information to Infection Control to limit the spread of hospital acquired infection.
* To contribute to clinical governance through service audit, review and development to ISO 15189 standards assessed by United Kingdom Accreditation Service (UKAS).
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| 3. ORGANISATIONAL POSITION |
| Clinical Lead Clinical Team ManagerService Manager Senior Biomedical Scientists**Biomedical Scientists – Specialist/Trainee Specialist**Biomedical Scientist – entry level |
| 4. ROLE OF DEPARTMENT |
| NHS Tayside Diagnostics Laboratories provide a comprehensive analytical, interpretative and clinical advisory service to primary and secondary care across NHS Tayside, North Fife and South Grampian. The department also collaborates in a range of research and development and clinical audit projects within Tayside, nationally and in association with third sector organisations and diagnostic companies. There is a considerable commitment to teaching across a diverse range of students, healthcare professionals and professional institutes.The Department is accredited to ISO 15189 standards, accredited separately as Blood Sciences and Microbiology. NHS Tayside Blood Sciences department is a United Kingdom Accreditation Service (UKAS) accredited medical laboratory No. 8681; and Microbiology No. 8610.The annual workload of the Department is in excess of 7 million tests, with workload rising by approximately 3-5% per annum, with a continually expanding repertoire. The total annual budget is over £20 million comprising of approximately £12 million staffing and £9 million reagents, consumables, equipment and services. The Department operates its services 24 hours per day, 365 days per year. Blood Sciences comprises of the following departments: Biochemistry, Haematology, Immunology, Bowel Screening, Point of Care Testing and Phlebotomy. The Blood Sciences laboratories receive over 10000 samples per day with a workforce of over 140 members of staff.Blood Sciences provides a 24/7 high quality, analytical, interpretive, and advisory diagnostic service, across two sites, with the main laboratory facility being at Ninewells Hospital in Dundee and a multi-disciplinary laboratory at Perth Royal Infirmary (PRI). The department is also a specialist referral centre for a range of tests, hosts the Scottish Bowel Screening Service, and provides Clinical Consultancy for Immunology across number of Scottish Health Boards.The multidisciplinary laboratory at PRI includes Biochemistry, Haematology and Blood Transfusion, which is regulated by the Medicines and Health Regulatory Agency (MHRA).Microbiology comprises of Bacteriology and Virology in Ninewells Hospital, including a multi-disciplinary Molecular Microbiology Diagnostics suite, providing a comprehensive analytical, interpretative and clinical advisory service. The Microbiology laboratories receive over 250,000 specimens per annum and employ over 100 staff. The Department acts as a source of expertise on control and management of infection, sterilisation and decontamination, antibiotic use and health and safety**.** Microbiology also provides a logistics service for the transportation of samples, pharmacy vaccines and chemotherapy drug deliveries across Tayside.The development and delivery of molecular assays for a number of microbial targets provides opportunities for rapid diagnosis in clinically relevant timeframes and permits detection of existing, new and emerging organisms of Public Health importance. These molecular assays are a new and expanding part of the Microbiology service provision. |
| 5. KEY RESULT AREAS |
| Responsible as an HCPC registered Biomedical Scientist for providing a high standard of patient care and within the standards of conduct and proficiency defined by the Health and Care Professions Council. Required to take responsibility for own work under a section supervisor who manages the work for the section.**Policies and Procedures*** To be accountable to the Service manager or Clinical Leader for quality and technical standards within the microbiology service.
* To exercise day to day responsibility for the specialist skills and competence required to provide a microbiology service.
* To prioritise own workload and co-operate with other staff on a day-to-day basis.
* To ensure equipment is functioning within parameters, problems are resolved, equipment is maintained and faults reported to manager.
* To ensure that test performance is within expected parameters and to identify problems, isolate their cause and their resolution.
* To comply with all relevant external and internal quality assessment systems.
* To comply with all Standard Operating Procedures (SOPs) including all Health and Safety guidance and legislation.
* To participate in reviewing services e.g. through library/IT searches, and through daily, weekly and monthly meetings and to propose changes, solve problems and amend policies and procedures as required.
* To exercise professional initiative in the consideration of the service provided in order, through effective communication with others, to maintain and develop service provision.
* To undertake or assist in the acquisition, manipulation and analysis of laboratory generated data to provide information for clinical audit, epidemiology and research.
* To ensure adequate stocks of reagents and consumables and report deficiencies.
* To participate in the assessment of new materials and test required to develop the service.
* To perform tests for research projects approved by the laboratory management.

**Scientific:*** To rotate through all sections and sub-sections of the department to provide specialist skills, knowledge and experience in the microbiological investigation of infectious disease.
* To maintain competence, skills and knowledge in diagnostic microbiology as appropriate.
* To evaluate incoming requests on a case-by-case basis for suitability and to determine the relevant investigations to be performed according to approved SOPs. To direct to appropriate medical staff those requests requiring more specialised medical evaluation.
* Without direct supervision carry out complex, specialist microbiological tests, interpret results and prioritise further investigations and reports on a diverse range of samples from human, environmental and other sources.
* Without supervision undertake complex and specialist diagnostic microbiological investigations this may include participation in out-of-hours service, shifts, weekend working and point of care testing.
* To undertake specialist manual microbiological techniques such as microscopy, cell counts, , culture of samples for bacterial pathogens, examination and interpretation of cultures, sub-culture and manipulation of isolates, identification of isolates, antibiotic sensitivity testing including detailed reporting, interpretation and validation of results.
* To undertake specialist instrument-based microbiological techniques such as blood culture, organism identification, sensitivity testing, antibiotic assay, a wide range of serological assays and bacterial toxin assays including quality control, calibration and validation, troubleshooting and maintenance for the detection of current infection, assessment of past infection and determination of immune status.
* To undertake molecular techniques (e.g. multiplex & in-house PCR) and other novel and developing technologies to provide rapid accurate results and to evaluate and validate investigations/results and controls.
* To be competent in all appropriate Health & Safety procedures such as COSHH, Risk Management, biohazards, personal protective equipment, infection control and waste disposal.
* To handle patient data and results from these investigations and help in the collection of data for epidemiological purposes and provide data to national epidemiological surveillance systems.
* To collaborate in research and development and provide Quality Assurance for national reference laboratories.
* To provide training in some aspects of Microbiology for BMS, Nursing and other Clinical/Medical staff
* To perform audit of microbiological performance including quality assurance.

**Management:*** To ensure open and honest communication with all staff within the Microbiology Department, Clinical Support Services team and across the Acute Services Division.
* To report any deficiencies in SOPs or H&S issues to the appropriate management.
* To be responsible for the safe use of expensive, highly complex equipment and instrumentation.
* To be responsible for the efficient use of expensive reagents and consumables and maintenance of adequate stocks within the work area.
* To participate in audit programs within microbiology and across disciplines and directorates.
* To participate in any training or education requirements that are agreed necessary to maintain or enhance competencies.
* To assist in the training and supervision of trainee staff including BMS, Medical Laboratory Assistants, Nursing, Junior Medical and other ancillary groups.
* To ensure data files and records held within the department are accurate and up to date.
* To highlight, through performance review, any training requirements, deficiencies or competency issues which may require development.
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| 6a. EQUIPMENTAND MACHINERY |
| * Biological hazard Containment level 2 and 3 (high risk) facilities, equipment and procedures
* Microbiological safety cabinets (ClassI and Class II)
* Fume cabinets
* Blood culture analyser
* Automated Sensitivity and Identification instrumentation
* Random Access and Batch analyser for immunoassay
* ELISA immunoassay instruments
* Automated sample processors
* Nucleic acid extractors
* Polymerase Chain Reaction (PCR) processors and analysers
* Liquid handling equipment
* Liquid Nitrogen storage equipment
* Microscopes (light, UV and specialist systems)
* Centrifuges
* Anemometers
* Formaldemeters
* Densitometers
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| **6b. SYSTEMS** |
| * Laboratory Information Management System e.g. Lab Centre, Winpath enterprise
* Electronic reporting systems e.g. ICE
* Various stand-alone IT systems e.g. Biorad Unity, Myla, Q-pulse
* E-mail, MS Teams and various word processing packages

**Responsibility for Records Management** All records created in the course of the business of NHS Tayside are corporate records and are public records under the terms of the Public Records (Scotland) Act 2011. This includes email messages and other electronic records. It is your responsibility to ensure that you keep appropriate records of your work in NHS Tayside and manage those records in keeping with the NHS Tayside Records Management Policy and with any guidance produced by NHS Tayside specific to your employment. |
| 7. ASSIGNMENT AND REVIEW OF WORK |
| The post holder's role would be to work within the context of department strategies, policies and procedures to improve the health of the population of Tayside NHS Board area.  |
| **8. DECISIONS AND JUDGEMENTS** |
| * Works independently and autonomously on selection of appropriate specialist tests within time, SOPs and workload parameters.
* Interprets complex test results, significance of findings and decides on further investigations.
* Makes qualified identification of organisms based on microscopic appearance for emergency specimens that require an urgent response.
* Accepts or rejects results based on skills, experience and quality control data.
* Addresses technical faults and problem solves for instrument or materials failures
* Compiles investigation reports from test results
* Organises own work pattern and collaborates organising with others within the requirements of the routine service and other department priorities
* Assesses the quality and suitability of reagents and test materials.
* Reviews of the suitability of requested tests for given clinical information.
* Reports to Senior BMS as line manager.
* Is accountable to Service manager, Clinical Team Manager and Clinical Leader
* Has duties assigned by the Service manager and Clinical Team Manager
* Has work reviewed by the Service manager or deputy and competency levels agreed with the BMS on a continuous basis.
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| 9. MOST CHALLENGING/DIFFICULT PARTS OF THE JOB |
| * Maintaining a high level of accuracy and precision in the process of complex and specialist laboratory investigations.
* Processing a large, complex workload to tight deadlines.
* Maintaining quality and UKAS ISO 15189 standards.
* Continuing professional development.
* Adapting to new demands in laboratory science and technology
* Disruption to life balance as a result of participation in shifts and rotas.
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| **10. COMMUNICATIONS AND RELATIONSHIPS** |
| * Work independently and autonomously but following agreed Standard Operating Procedures.
* Communicate verbally and in writing with a wide range of Consultant and Junior Medical staff, other clinical/scientific and technical staff internally and externally. Some of this communication will be of a complex and confidential nature regarding results of investigations or rejection of samples and influencing skills may be required.
* Provide specialist input and information at meetings regarding service provision, methodology, quality assurance and clinical governance.
* Provide technical advice on tests, results and interpretation.to clinical users.
* Be accountable through senior BMS staff to the Clinical Team Manager.
* Work within the wider Microbiology team as part of the diagnostic service and infection control service.
* To liaise with other clinical, laboratory or other service departments to maintain, enhance and improve service provision.
* Co-operate in cross-directorate audit and clinical assessment programs.
* Co-operate in cross-discipline areas within laboratory services.
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| **11. PHYSICAL, MENTAL, EMOTIONAL AND ENVIRONMENTAL DEMANDS OF THE JOB** |
| **Work conditions:*** Handling of a wide range of biohazardous samples containing pathogens in Hazard Group 3 e.g. TB, E coli 0157, HIV, Hepatitis B and C other blood borne agents; Hazard Group 2 organisms e.g. Salmonella, MRSA and potentially novel agents such as SARS, Avian flu COVID and Mpox.
* Direct daily contact with pathological samples, contained and un-contained body fluids and other biohazardous materials e.g. faeces, blood, urine, sputum and tissue.
* Frequent (daily) exposure to unpleasant smells from autoclaved clinical waste, specimens and cultures
* Handling of reagents, solvents and other hazardous chemicals used in fixing, staining, biochemical tests, disposal of waste etc.

**Mental/physical effort:*** Continual requirement for high levels of concentration within the work period - up to 2 hours uninterrupted.
* Because Microbiology still has a high degree of manual testing a high level of manual dexterity and fine motor skills are required during each work session.
* High level of eye and hand co-ordination required for prolonged periods - up to 2 hours uninterrupted.
* Sitting/standing with restricted movement for prolonged periods with some repetitive work while processing specimens and microscopy - up to 2 hours uninterrupted.
* Occasional contact with clinical staff in stressful situations.
* Daily contact with request forms/electronic requests containing sensitive and distressing information e.g. GUM legal cases, HIV syphilis status.
* Work patterns can be unpredictable and subject to interruptions such as emergency specimens that require priority action.
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| 12. KNOWLEDGE, TRAINING AND EXPERIENCE REQUIRED TO DO THE JOB |
| Post-holders must have the following or equivalent.* Honours degree in Biomedical Sciences
* Post graduate Specialist Diploma or equivalent post registration experience in Microbiology.
* Current registration with the Health and Care Professions Council (HCPC)
* A record of Continuing Professional Development (CPD) to HCPC requirements
* Institute of Biomedical Science Certificate of Competence.
* Specialist knowledge of clinical conditions and their effect on investigations.
* Specialist knowledge of infectious diseases and experience in specialist diagnostic investigations
* Knowledge of interpretation of results of microscopy, culture, identification of organisms and antibiotic sensitivity testing
* Knowledge of interpretation of controls & results of molecular assays, immunoassays and ELISA’s
* Training and experience in preparation of media and reagents, COSHH and Risk Assessments, dealing with hazards and waste disposal to meet statutory requirements and ensure a safe working environment.
* Training and experience in immunoassays, ELISA, and molecular techniques
* Training and experience in the use of laboratory IT systems and knowledge of their applications
* Specialist knowledge of basic quality management systems i.e. quality control, risk management and adverse incident reporting
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| **13. JOB DESCRIPTION AGREEMENT** |
| A separate job description will need to be signed off by each job holder to whom the job description applies.Job Holder’s Signature:Head of Department Signature: **(I confirm this Job Description accurately reflects the duties and** **responsibilities of the postholder and does not impact upon any other** **postholders role)**  | Date:Date: |